AMERICAN ARTISAN

ESSENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

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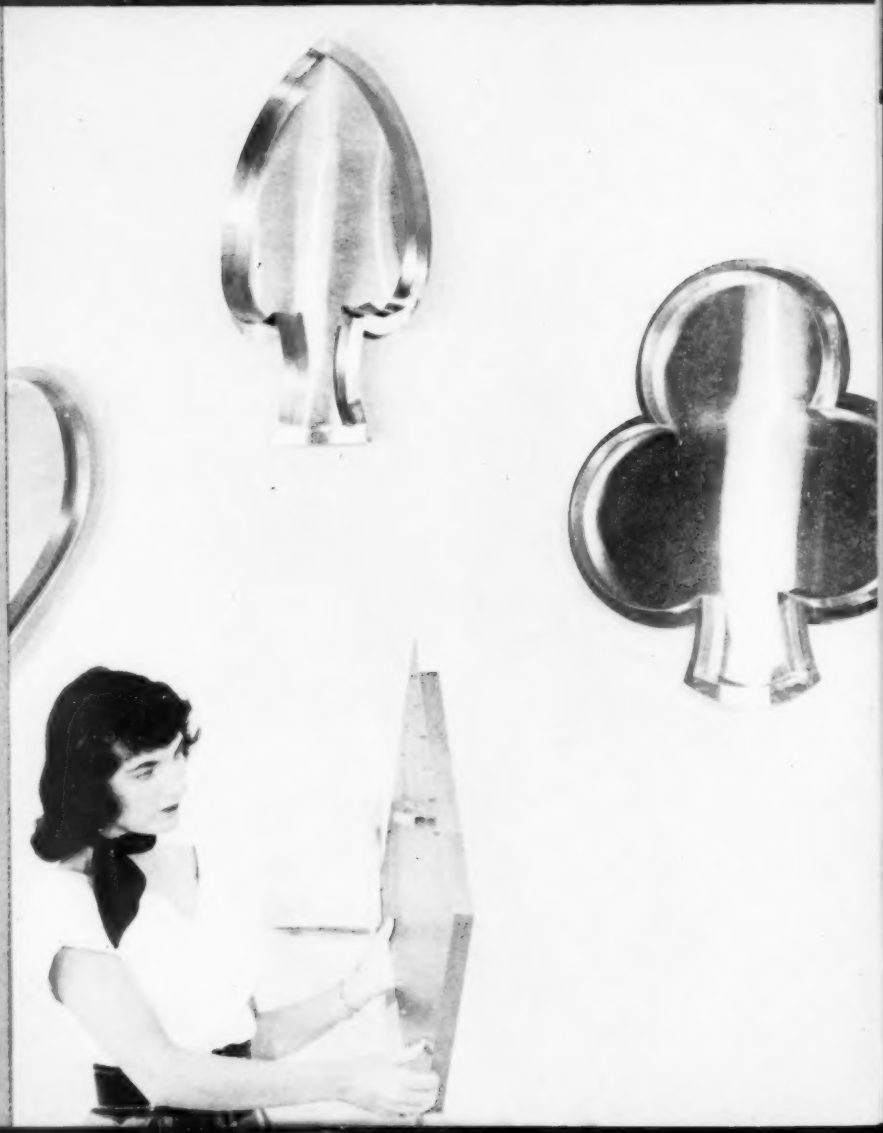
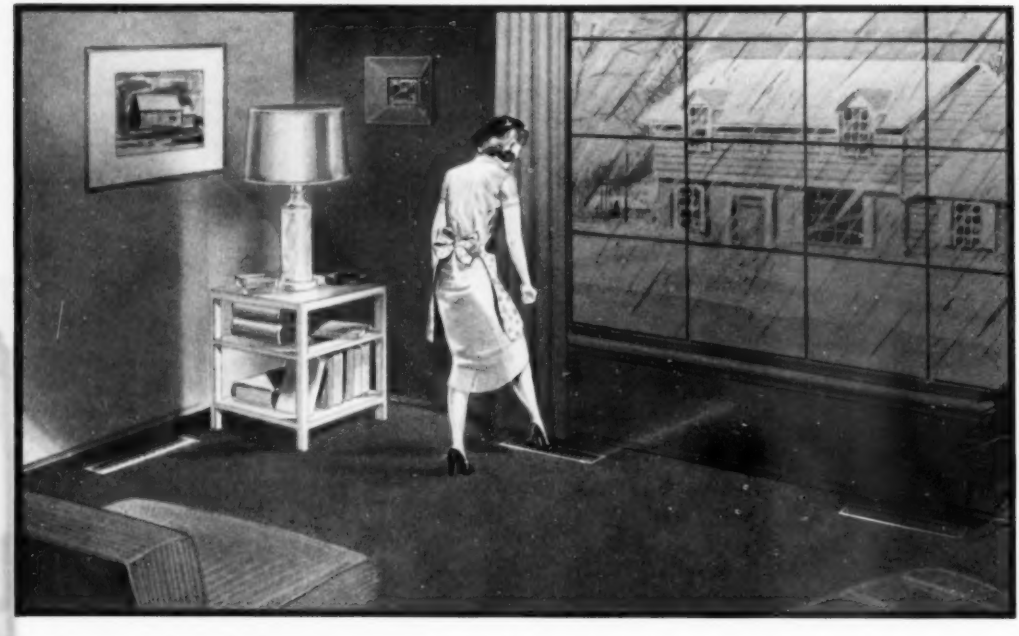
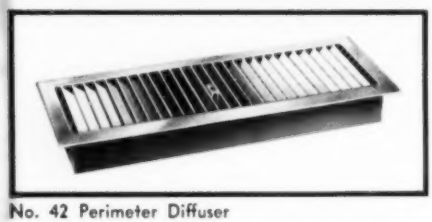
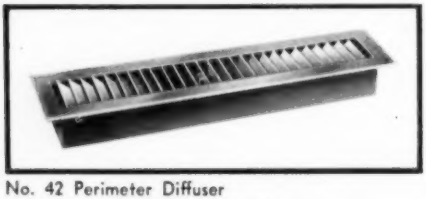


TO FUNCTION PERFECTLY YOUR PERIMETER HEATING INSTALLATION DEMANDS THE CORRECT TYPE OF PERIMETER REGISTER





No. 42 Perimeter Diffuser
4" wide — available in 10", 12" and 14" lengths.



No. 42 Perimeter Diffuser
Narrow 2½" width — 14" long.
Also ideal for use under kitchen sinks and other narrow, hard-to-fit spaces.

AIR CONTROL Perimeter Diffusers were designed to meet this demand.

They put the warm air where you want it, in a narrow fan-shaped pattern, that blankets windows and cold wall surfaces. Remember, only Air Control offers you this special type register in a complete range of sizes to meet your every need.

Perimeter Diffusers are long narrow registers built of heavy gauge metal. With vanes at factory setting, the air is delivered in a narrow, fan-shaped pattern. However, vanes may be adjusted for any desired air pattern. You will find it easy to balance the system right at the register face with the adjustment screw that stops the valve at any desired opening.

There is no subsitute for Air Control Perimeter Diffuser on your Perimeter Heating Installations. If you are not already using Air Control Perimeter Diffusers see your Air Control Jobber today. He has them in stock.

AIR CONTROL PRODUCTS, INC.
COOPERSVILLE MICHIGAN

NEW Century Lo-boys with

CONTROLLABLE HUMIDIFIER, AIR WASHER AND PURIFIER

Enthusiastic buyers increase Century dealers' profits!

Like all heating men, you realize the true facts about humidified heat. You know humidifiers are unsatisfactory unless they can be accurately regulated to compensate for weather changes plus differences in climate and home construction. You also know how easy and profitable it would be to sell a heating line offering built-in humidity that can be controlled to the exact degree desired.

Only Century offers this important selling advantage. It's a sales-closing exclusive for Century dealers. Century dealers proudly tell their customers, "YOU—not the manufacturer—determine the exact degree of humidity for your home. A simple humidistat, placed by your thermostat, permits accurate humidity control and makes your home a more comfortable place to live. You enjoy this heating 'extra' only when you install Century." When you sell the progressive Century automatic heating line you profit from a line that's years ahead of current standards. It's a complete line too — 38 gas and oil units that sell and satisfy. Write today for the Century catalog and complete details. You'll be glad you did.

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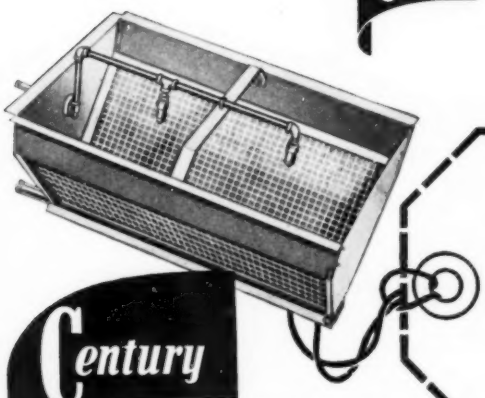
CEDAR RAPIDS, IOWA



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Advertised in Better Homes and Gardens and Small Homes Guide.

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Please send me further details on your complete automatic heating line.

- ☐ Gas Hi-boys
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- ☐ Oil Conversion Burners
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• • PIONEERS IN AUTOMATIC HEATING FOR OVER 26 YEARS

AMERICAN ARTISAN

JULY 1952

FEATURES

CONVENTION REPORTS

DEPARTMENTS

Founded 1864

Volume 89, No. 7

RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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LOOKING FOR CONVERSATION?

IT'S EASY WHEN YOU TALK ABOUT

Syncromatic

These Are The FACTS!

Designed with the dealer in mind – his problems of sales, installation and maintenance caused SYNCROMATIC Engineers to create:

① A Durable – long life heat exchanger – built of heavier steel and solidly welded.

② A heat exchanger easy to fire – no pulsations – no hot spots to shorten life.

③ Pre–installed high temperature refractory – designed for the amount of fuel to be burned.

④ Casings that fit – go together – your mechanic will smile.

⑤ Casings finished in baked green Hammertone, smooth and good looking – you won't have to sell Mrs. Customer – She'll buy!

FOR YOUR CONVENIENCE & PROTECTION: All SYNCROMATIC Gas units come to you completely assembled, wired, line fired and tested. No bad controls, expansion noises, reversed motors – blowers. Checked for flame configuration and efficiency.

Your customer will appreciate your judgement in choosing SYNCROMATIC – the best in automatic heating. The SYNCROMATIC you sell and install for him will be your best advertisement for more profitable business.

INSTALL SYNCROMATIC, THE FURNACE THAT TAKES COSTLY "GO BACK" OUT OF CONTRACTING!

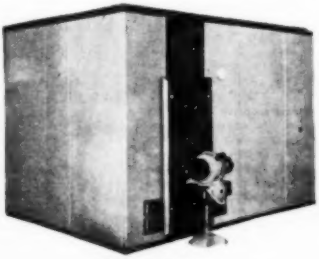
Write – We'll help you with your problems.

COAL–OIL–GAS

FORCED AIR OR GRAVITY

GF Gas Fired Series

CF 200 Coal Fired Series



HI–CAP Series 330,000 to 1,000,000 BTU

700 Oil Fired Deluxe Series

900 Oil Fired Series

Syncromatic Corporation

WATERTOWN WISCONSIN

7–5–2

the editor's notebook

Air Conditioning Marks Its Golden Anniversary

Air conditioning is celebrating its fiftieth anniversary in 1952. It achieved the status of a billion dollar industry for the first time in 1951. Predictions are made that the next 50 years will see the industry increase to reach a volume of $5 billion annually.

Four principal areas cover the various fields of air conditioning, as follows:

1. Demand for air conditioning in multi-story buildings, such as offices, hotels and apartments.

2. The market for complete home air conditioning. More year-round air conditioners for the home were sold by one manufacturer in 1951 than in any previous year.

3. Self-contained units as well as installed systems in stores and shops.

4. The application of air conditioning for industrial purposes, a vast field just coming into its own.

Domestic Holdings of Refined Copper

The Copper Division of the National Production Authority is now advising domestic holders of refined copper who are in doubt whether such copper can be converted for their use that arrangements can be made for its conversion.

Those in possession of the metal may apply to the Copper Division for necessary permission to convert it into CMP forms and shapes. When making application, it will be necessary to furnish information specified in paragraph "C" of section No. 6, NPA Order M-16.

the editor's notebook

Insufficient Service Space for Oil Heating Units

The Distribution Division of Oil-Heat Institute of America recently queried its 2,000 members as follows:

"In basementless and utility room houses in your area, is enough space provided around oil-fired heating units to permit adequate servicing?"

Of the replies received, 88.3 per cent answered "No", only 11.7 per cent, "Yes".

A second question asked "If not, in your opinion could the manufacturer redesign units to permit adequate servicing in space provided?" While 29.9 per cent stated "Yes" to this question, 50.6 per cent answered "No", and 19.5 per cent did not answer.

This short-sighted practice on the part of builders, contractors and architects in providing too little space around heating units in this type of houses results in the long run in a false economy to the home owner.

Most OHI member oil burner dealers who felt that the manufacturer could *not* redesign units to permit adequate servicing, pointed out that were they to do so, it would only enable the builder to restrict space allowed still further.

OHI unequivocally condemns the practice of cutting building expenses by cutting the size of the areas around the heating unit in modern homes.

Milwaukee Heating Equipment Survey

In a recent consumer analysis conducted by the Milwaukee *Journal* of the greater Milwaukee market, findings dis-

CHAR-GALE PLUS!

40% MORE CAPACITY

Increasing the diameter of the pipes in a small pipe system from 4 inches to 4½ inches as has been done by Char-Gale using the Char-Gale register-and-box unit, adds more than 40% to the BTU capacity.

Take a good 4-inch pipe system, with all its advantages . . . increase the capacity by a surprising margin . . . top it off with a register-and-box unit engineered to match it . . . and you have Char-Gale's 4½-inch duct system, the finest thing in small pipe installations. The additional capacity of this addition to the Char-Gale line means more adequate handling of the furnace output and provides more BTU's per run.

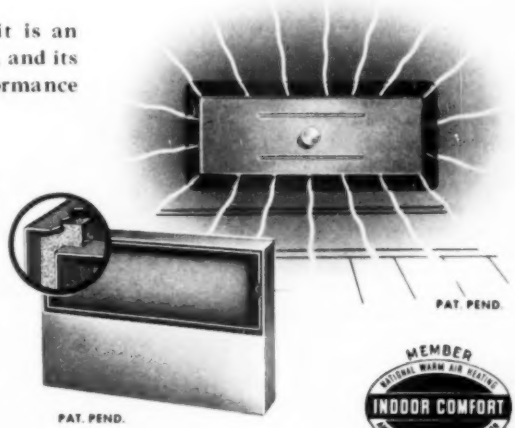
Char-Gale saves you time and labor, by giving you a complete system, well engineered and easy to install. Customer satisfaction and increased profits for you result from this new Char-Gale system with small pipe advantages, PLUS.

Char-Gale's NEW register unit

Char-Gale's new register-and-box unit is an integral part of this new 4½-inch system, and its use is vitally necessary for the proper performance of the system.

The new Char-Gale register distributes heat evenly in all directions, with no drafts or blasts of hot air. It is adjustable, permitting complete balancing at the registers, and has a positive shutoff without noise.

Designed for either dry or wet wall construction, *the new Char-Gale register box* eliminates the need for a plaster frame. The foam rubber gasket provides a positive seal, with no leakage of air between the register and the register box.



PAT. PEND.

PAT. PEND.

MEMBER
NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION
INDOOR COMFORT

Literature on this system is now available.

CHAR-GALE MANUFACTURING COMPANY

closed that coal or coke is used in 51 per cent of all homes; 28.0 per cent burn oil, and 21.0 per cent heat with gas. In 1949, the percentages were 77.0 per cent coal or coke, 19.0 per cent oil and 4.0 per cent gas. The considerable increase in gas heating was due to natural gas coming into the market at the end of 1949.

A.G.A. Summer Air Conditioning Award

The American Gas Association has announced the 5th annual A.G.A. Progress Award for summer air conditioning. Cash prizes and trophies will be awarded to the three gas utilities which, in the opinion of the judges, made outstanding contributions during the period of Aug. 31, 1951-Aug. 31, 1952, to the progress of *gas* summer air conditioning. Awards are sponsored by Servel, Incorporated.

Entries may be based on any activity relating to the sale or installation of *gas* summer air conditioning. Applicable topics include sales planning, application engineering, product improvement, sales promotion and advertising, and other achievements that have been successful in developing sales.

The jury of awards includes representatives from the American Society of Heating and Ventilating Engineers; the educational field; gas trade publishers; the building industry press; Gas Appliance Manufacturers Association; A.G.A.; and a Residential Gas Section of A. G. A.

Awards will be made at the annual convention of A.G.A. at Atlantic City, Oct. 27-30.

the editor's notebook

Comparable Furnace Shipments, 1952-1951

The National Warm Air Heating and Air Conditioning Association, Cleveland, has recently issued some revealing statistics covering furnace shipments for the first quarter of 1952 compared to the same period for 1951. The figures are based on Bureau of Census calculations.

Warm Air Gravity Furnace Units - 1952

Coal	*Oil*	*Gas*	*Total*
11,812	2,991	11,666	26,469

Warm Air Gravity Furnace Units - 1951

Coal	*Oil*	*Gas*	*Total*
26,514	2,704	22,637	51,855

Winter Air Conditioning Units - 1952

Coal	*Oil*	*Gas*	*Total*
3,221	57,655	62,420	123,296

Winter Air Conditioning Units - 1951

Coal	*Oil*	*Gas*	*Total*
6,107	73,476	90,910	170,493

The comparative shipments of warm air gravity units versus winter air conditioning units for 1952 as compared to 1951 is as follows:

	Gravity	*Winter A. C.*	*Total*
1952	26,469	123,296	149,765
1951	51,855	170,493	222,348

Gross National Product, First Quarter, 1952

The gross national product, the market value of the nation's output, was stated at an annual rate of $339½ billion in the first quarter of 1952, the Office of Business Economics, U. S. Department of Commerce announced recently. This small increase represented a slightly larger volume of production, since average prices remained virtually unchanged.

the editor's notebook

For the third successive quarter, a decline in business inventory accumulation has been an important influence working toward over-all balance between supply and demand.

Although the economic position was one of gradual expansion, the rates of change in the various segments of the economy continued to differ widely.

Recent Oil Facts

The drilling forecast for 1952 for 45,466 new oil wells is approximately 1,000 more than in 1951.

World production of oil has reached an all time high of 12 million barrels a day, of which the U. S. produces more than half. The proved reserves of oil known to be available underground were greater at the end of 1951 than a year earlier.

Refinery capacity in the U. S. is estimated to increase by 3.5 per cent in 1952, a further step towards keeping ahead of consumer demand.

More than 8 million suburban and farm homes now use liquefied petroleum gas.

There are 150 young men now enrolled in oil heating courses at three New York City high schools. These courses, sponsored by members of the oil heating and petroleum industries, are proving popular; further classes are anticipated. Over $50,000 worth of equipment has been received from manufacturers of burners, controls, tanks, equipment and accessories.

As an inducement to the prospect to buy his new oil burner during the summer months rather than wait until fall, one enterprising dealer offers to fill the 275 gallon tank without charge if installation is made before August.

the editor's notebook

Uncalled-for Publicity

At the recent annual meeting of the Accessory Division of the Oil-Heat Institute of America, in Philadelphia, one of the delegates brought up an instance of unfavorable publicity to oil-heating which was actually from a range burner explosion. Boston papers had carried headlines about an oil-burner explosion resulting in death to members of a family. It was recalled that newspapers nearly always refer to a range burner as an oil burner; most headlines stating that oil-burners have caused injury or death, actually refer to the kitchen stove facility, if the facts were known. Some serious thought ought to be given to a defense against such unwarranted bad publicity.

This subject will be reviewed at the July meeting of OHI's Board of Directors. The editors of AMERICAN ARTISAN suggest that interested readers send us clippings pertaining to any similar known conditions.

Atomic Heating Predicted for Homes

The housing industry is forecasting that homes in 1962 will feature dual heating-air conditioning units to serve in any climate. It is further predicted that heating may be provided either by electricity or by atomic power.

Lighting for these homes may come from light radiating surfaces which can be controlled for intensity, rather than spot or strip lighting fixtures. Also, windows will have less glare.

Here-you're the Man of The Day every day in the year

You're nominated, as a customer of Wolff Metal Service, for special consideration, special thinking, special development work.

You get this intensive treatment because Wolff's sense of responsibility extends far beyond the mere filling of orders — important as that may be. Every customer here is regarded as a partner in this business, a shareholder whose confidence in the organization rests squarely on performance and whose future business must be earned by merit — not expected as a matter of habit.

All of Wolff's steadily expanding resources are geared to this creed of customer service that works for your good every hour of the day. If it appeals to you, as it does to so many other large and small buyers of industrial metals throughout the Midwest, call WAlbrook 5-3200 or write the next time you need

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Carbon Steels, Stainless Steels, Aluminum, Copper, Tin Plate, Expanded Metal, Metal Decorating

BENJAMIN WOLFF & COMPANY

General Office and Warehouse — 8600 South Seeley Ave., Chicago 36, Ill.

Warerooms Office — 176 W. Wisconsin Ave., Milwaukee 3, Wis.

the editor's notebook

L.P.G. Association Convention in Chicago

An all-time high in attendance and number of exhibits was reached at the 1952 convention and trade show of the Liquefied Petroleum Gas Association, held at the Palmer House, Chicago, May 12-14. Some 2,500 persons attended the event, a 14 percent increase over 1951.

Historically the demand for LP-Gas has been increasing at the rate of from 20 to 25 per cent each year. There is evidence that demand for all petroleum products is leveling off, however, and this trend may affect the demand for LP-Gas. The Petroleum Administration for Defense predicts a probable demand for 5.8 billion gallons in 1953.

Arizona Firm Uses Tin Cans to Step up Copper Production

The Inspiration Consolidated Copper Co., at Inspiration, Ariz. is using millions of tin cans from the southern California area to boost its copper production. With the defense effort utilizing 60 per cent of the nation's copper, civilian copper needs are now in dangerously short supply. The Federal government is stepping in to promote the salvage of used tin cans in order to increase copper production.

At the Inspiration plant, millions of cans shipped in from West Coast cities are utilized in an ingenious manner to speed up its copper supply. The cans consist of about 98¾ per cent steel with a thin coating of tin. The cans are first sent to a salvage plant where a kiln burns off food, labels, and grease, before a huge shredder reduces them to small pieces. These shreds are used in solutions with sulphuric acid to extract the copper from the ore.

To produce one ton of copper at the Inspiration plant, 1¼ tons of tin cans are needed. The shredded cans are dissolved in an acid solution in small vats, called "iron launders" to form iron sulfate. This solution and sulfuric acid are then percolated through low-grade copper ore from the pit after it is crushed and dumped into lead-walled leaching tanks, each 175 ft. long, 67½ ft wide and 18 ft deep. The ore remains in the tanks eight days while the copper is dissolved from it. The cans disintegrate as the copper begins to form on the metal. The ore tailings are washed over several times to extract all possible remaining metal.

The "tin can" method has already proved economically feasible at the Inspiration plant, and millions of tons of copper ore will be refined by the ingenious procedure.

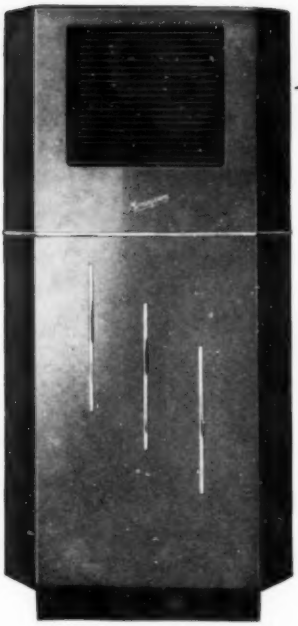
Copper Strike in Chile

The current Chilean copper strike could have repercussions more serious than any steel strike in the U. S. Approximately 25 per cent of U. S. requirements, some 22,000 tons per month, are imported from Chile. The stoppage will be harmful in 30 days. As yet there is no indication of a settlement; if the strike continues, the copper supply may suffice for direct military needs only.

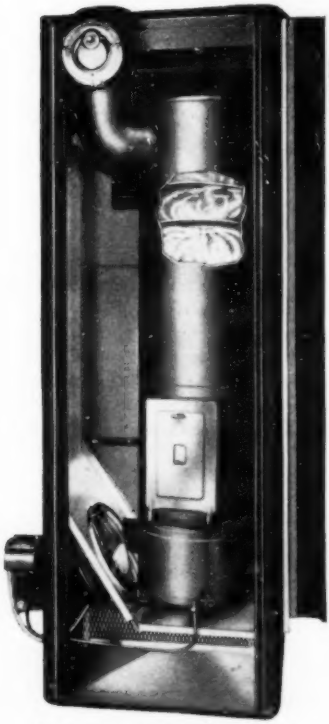
Remember this:

"The most difficult customer you have will be the most difficult prospect for your competitors."

Heil "Merchandiser"



MODERN EXTERIOR STYLING



RUGGED INTERIOR CONSTRUCTION

THE SMALL HOMES MARKET MEANS

LARGER PROFITS

FOR YOU . . . WHEN YOU SELL THE

Monogram

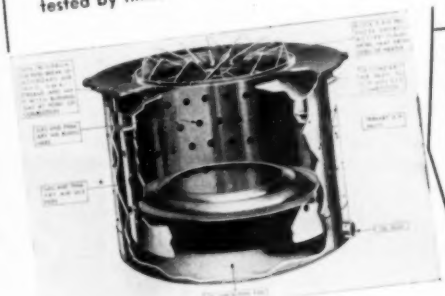
OIL WALL HEATER

The ever-increasing small homes market is a lucrative one for heating contractors. It can be cultivated and made to realize even better results by the proper selection and promotion of a well designed, efficient heating unit, and we're sure we have the answer in the new MONOGRAM Oil Wall Heater.

The MONOGRAM is a modern, packaged unit which allows YOU to economize on installation time, and your customer on space. No more bulky, unsightly heating plants for him . . . just a handsome, compact unit that extends only 3½" into his living room.

With the MONOGRAM Oil Wall Furnace you can offer your prospective customers a complete furnace installation at space heater prices because there's no need for duct work and since it is listed by the UL, an inexpensive pre-fab chimney may be used.

Remember too, that the exclusive MONOGRAM burner has been in use since 1937, and its dependability is unquestioned. It's tested by time!



THIS IS THE ANSWER . . . THE

POWER-AIR BURNER

THAT PRODUCES MORE HEAT AT LESS COST

QUINCY STOVE MANUFACTURING COMPANY
QUINCY, ILLINOIS

Dealer satisfaction, like a coin, has two sides...

A QUALITY PRODUCT and A SOUND POLICY

Quality is an essential part of any product that continues to provide customer and dealer satisfaction, year after year. In Waterbury, that quality is a product of effective design and skilled craftsmanship. It is based on more than 45 years of experience in the warm air heating field. And it results in efficient, economical, dependable heating from every unit in the Waterbury line.

In addition to a quality product with a good sales potential, dealers and distributors are entitled to a sound, clearly-stated policy. That, too, is theirs with Waterbury. The Waterbury policy provides exclusive distribution rights, a close, personal relationship between dealer, distributor, and factory, and a complete warm air line. No wonder Waterbury gives dealer satisfaction.

Waterbury

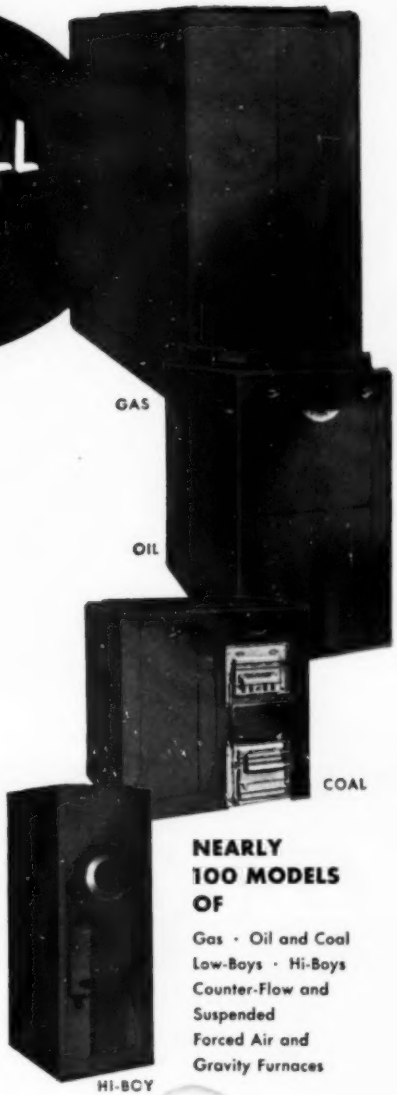
FURNACES, WINTER AIR CONDITIONERS — GAS CONVERSION BURNERS

The Waterman-Waterbury Co.

OVER 45 YEARS OF WARM AIR HEATING

1122 Jackson Street N. E. **Minneapolis 13, Minnesota**

QUALITY MERCHANDISE IS STILL *in demand*



VICTOR

QUALITY FURNACES SINCE 1890

The smart buyer still wants *QUALITY* and it is still the policy of Hall-Neal Furnace Company to supply that demand. The VICTOR line . . . skilfully engineered and ruggedly constructed . . . takes you out of the competitive class. For more than 60 years the name VICTOR has stood for quality in the furnace field, and their exclusive features of genuine merit enable you to sell MORE Victors EASIER. You'll keep more profits, too, because once installed, a VICTOR will give years of service-free heating comfort!

NEARLY 100 MODELS OF

Gas · Oil and Coal
Low-Boys · Hi-Boys
Counter-Flow and Suspended
Forced Air and Gravity Furnaces

Investigate Victor **NOW**

WRITE US! **Find out about VICTOR. An assured exclusive territory with the complete VICTOR line will make you more money.**

THE FURNACE WITH FUEL SAVING FINS

Manufacturers of Victor and Halco Furnaces

GAS · OIL · COAL FURNACES · STOKERS · BLOWERS · CONVERSION BURNERS · ACCESSORIES

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1322-42 NORTH CAPITOL AVE., INDIANAPOLIS 7, IND.

MILCOR Style K Box Gutter

Extra strength — Flat hemmed edge adds rigidity, eliminates sharp edges — for safe, easy handling.

Snug fit — Beveled edge provides spring fit against facia.

No-sag rigidity — Bead at bevel keeps back of gutter straight and true, for rigid uniform appearance.

Style K furnished in 4", 5", 6" sizes. Standard or high back. Complete line of accessories available.

*Reg. U. S. Pat. Off. S-101

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News Round-Up

Improvement of Sheet Steel Fabrication Results in Lower Costs

ALONG WITH THE IMPROVED properties of sheet steel in the past three decades, the price of 20-gage cold rolled sheets has been reduced from $135 to $104 a ton, contrasting with large increases in steel wages and prices of products made of steel, according to Frank H. Fanning, vice president in charge of operations, Armco Steel Corp., Middletown, Ohio, at the recent General Meeting of the American Iron and Steel Institute in New York.

Describing the development of wide strip steel mill equipment from the primitive 18th-century ideas to the first successful mill on multiple length sheets in the nineteen-twenties at Ashland, Ky., Fanning stated that the production of wide hot strip became possible as soon as engineers were able to reduce to scientific terms the principles practised by the old time rollers on hand mills for about 150 years. The key to the success lay largely in the slightly concave cross section of certain rolls, together with attention to required temperatures and pressures.

With the development of the new production method, new products of steel and new techniques of fabrication were brought into being, Fanning explained. These developments accounted for the employment of many workers in production and fabrication of sheet steel for uses which were non-existent before the appearance of the continuous mill (such as the one-piece automobile top.) The output of flat rolled steel jumped from 11.6 million tons in 1923 to 39.7 million tons in 1950, rising from 31 per cent of total steel production to 53 per cent.

NWAHACA Publishes Small Pipe Perimeter Heating Manual

A NEW 24-PAGE small pipe warm air perimeter heating guide has just been published by the National Warm Air Heating and Air Conditioning Association, 115 Public Square, Cleveland 14, Ohio. Designated as Manual 10, this book is a tentative manual for use in designing and installing low velocity heating systems, using 4-in. round pipe with winter air conditioning furnaces rated at a total external static pressure of .20 in. water gauge, or comparable, at sea level, and with a temperature rise range of 70-100 deg. through the furnace.

The material presented in the new guide is based on the best industry data available and was assembled by a special committee appointed by W. D. Redrup, president of the association. The manual's purpose is to outline standards for heating contractors desiring to install small pipe systems and for inspecting agencies.

Two types of small pipe systems are described—the individual pipe system and the extended plenum system. The design and installation suggestions given cover the use of small pipe perimeter heating in one and two-story houses with full or partial basements and in houses constructed over crawl spaces. The system is also adaptable in larger houses where pipe runs may be too long for practical purposes, in which cases two or more separate heating systems can be used.

The systems described in Manual 10 operate at relatively low velocities. Actually, the air is delivered at a velocity seldom higher than found in properly adjusted and balanced winter air conditioning systems using larger pipes and ducts. The manual does not preclude the use of systems designed for higher external static pressure or using pipe sizes other than the 4-in. diameter recommended, when such systems are installed in accordance with the manufacturer's previously approved design data or subsequent developments.

Fuel Oil Supply for the Winter of 1952-53

SPEAKING BEFORE THE Empire State Petroleum Association in New York recently, Cecil L. Burrill, director of the program division of the Petroleum Administration for Defense, stated that the recent strike of oil industry workers means that the industry must increase its refinery runs for the next six months by several thousand barrels per day to meet anticipated requirements. He warned that if the winter should be 10 per cent colder than normal, supply problems to the East Coast would be severe.

The speaker urged oil distributors and jobbers to fill their storage tanks to meet a winter's peak requirements for heating oil on the East Coast, but stated that many of the supply problems faced hinge upon price regulations. Oil industry spokesmen have indicated that price increases of at least one-half cent per gallon will be required.

News Round-Up

At the same meeting, S. A. Swensrud, president of Gulf Oil Corp., said that because oil discovery in the U. S. is becoming more difficult, national interest requires use of reasonable quantities of oil from other world markets.

A recent edition of the New York "Journal of Commerce" contained an article by N. F. Ronis concerning the limitation of heating oil sales by Esso Standard Oil Co., stating in part, "Esso will take on no new heating oil reseller accounts during the coming year, and current reseller customers can expect no more product than was offered to them under last year's contract. Esso is also following the same summer fill-up program as last year with its direct home heating customers. However, it will limit its direct customer business in order to maintain its present volume, and will take on new direct home heating accounts 'only to cover normal turnover'."

GM Executive States Future Engineering Problems

CHARLES L. MCCUEN, GM vice president and general manager of GM research laboratories recently stated that the nation's political, social, and economic future hinges on how well the engineer's creative force is applied to efficient use of men, machines, and materials. Speaking at the Michigan State College Engineering Exposition, East Lansing, Mich., McCuen continued:

"I believe that it is no mystery why America has advanced into world leadership. The mystery is why others have not also seen the reason for our success and copied our methods. Sound development of a nation depends on progress of engineering and engineering education.

"When compared with an average man's output of one-tenth of a horsepower, engineering developments have increased man's output at least 100 times."

Continuing in his remarks, the GM executive stated: "Engineers should seek new processes to obtain such materials as aluminum, iron, magnesium, titanium, manganese, nickel, chromium, copper, zinc, and lead, now locked in the earth's crust, the atmosphere, . .and the seven seas."

Another challenge to the future engineer is utilization of solar energy, McCuen declared. "Solar energy falling upon one square mile of the earth's surface per day is equivalent to 400,000 gallons of oil or 2,000 tons of coal."

He listed what he regarded as the ten major engineering problems of the future:

1. More efficient gas turbines and other power plants
2. Power directly from the sun
3. Processes for obtaining materials from the earth's crust and the seas
4. Control of corrosion of metals
5. Development of an adequate highway system
6. A practical atomic power plant
7. Processes for obtaining fresh water from the sea
8. Development of new synthetic materials.
9. Application of engineering principles to social problems.
10. Disaster controls for storms, floods, hurricanes and drouths.

Intelligent Selling Required to Stimulate Business

ACCORDING TO A BULLETIN recently received from the National Heating Wholesalers Association, Inc., Cleveland, sellers "no longer can sell anything at any price." Instead of cutting prices, the most intelligent approach is aggressive promotion, stressing sound values.

As long as manufacturers continued in the same groove, selling the same products, unit sales levelled off in this manner:

	1950	1951
Refrigerators	6,200,000	4,075,000
Television Sets	7,463,800	5,100,000
Home Radios	8,174,600	6,600,000
Non-automatic Toasters	730,000	375,000
Ranges	1,830,000	1,400,000
Vacuum Cleaners	3,759,700	2,865,000

On the other hand, since many new products had fresh sales appeal, people bought more of them last year than they had in 1950:

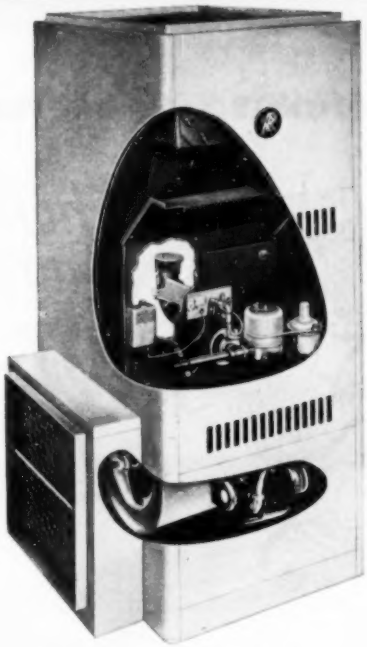
	1950	1951
Air Conditioners	195,000	251,000
Home Freezers	890,000	1,050,000
Floor Polishers	240,000	275,000
Dishwashers	230,000	260,000
Clothes Driers	318,500	495,000
Steam Irons	1,645,000	2,100,000

(*Figures are from Fortune, April* 1952)

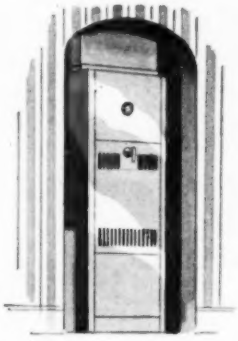
Air Conditioning Expects Fivefold Sales Increase

IN THE NEXT FOUR years, the air conditioning industry foresees a fivefold sales increase. In 1951, sales amounted to $1,000,000,000. There are approximately 40,000,000 homes in the country; at present, only 350,000 are provided with air conditioning.

SU-30-G
85,000 BTU
input per hour



SU-35-G
110,000 BTU
input per hour



AGA Approved!

for alcove and closet installation

Gas-fired RICHMOND winter air conditioner

Where space is tight, use the Richmond SU-G, gas-fired, vertical winter air conditioner . . . ideal for the small ranch-type installation.

Now the SU-G is approved by the AGA for alcove and closet installation. When ordered for this type of installation our standard unit is especially adapted to meet the rigid AGA requirements. When ordering the Richmond SU-G for closet or alcove use, be sure to state that fact.

Remember that the SU-G can be furnished with a bottom filter rack as optional equipment at no extra charge. And remember these special features: Remote pilot igniter (standard equipment) for convenience and safety in lighting burner from outside of furnace... burner and controls quickly and easily removable as mounting plate is held securely in place with four nuts. When space and economy count . . . count on the Richmond SU-G.

RICHMOND PLUMBING & HEATING

RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

Buy your radiators at Bath Center Today

Richmond Radiator Company AA-7
19 East 47th Street, New York 17, N. Y.
Please send me full information on Richmond SU-G gas-fired winter air conditioners.

Name.....

Company.....

Address.....

Approved for GAS!

Approved for OIL!

Luxaire®

HEATING AND AIR CONDITIONING UNITS

AVOID lost sales!

AVOID delays!

AVOID frozen or slow moving inventories with *Luxaire!*

You can be independent of fuels with most Luxaire Furnaces and Air Conditioning Units because they have been designed to burn either Gas or Oil with equal efficiency! Luxaire Units with Luxaire Gas Burners carry the A. G. A. seal of approval . . . The same Luxaire Furnaces and Air Conditioning Units with Underwriters Laboratories approved Luxaire Oil Burners are equally as efficient as the Gas Fired Units!

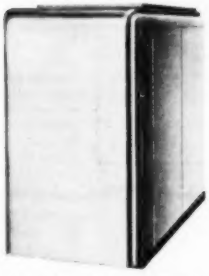
. . . . INSTALL the furnace NOW without the burner!

Wait until cold weather arrives before you decide on Gas or Oil.

OR—INSTALL OIL NOW and CHANGE TO GAS anytime in the future

—OR INSTALL GAS NOW, and CHANGE TO OIL anytime in the future.

The Luxaire Gas Fired basement air conditioning unit.



Front view of Luxaire basement air conditioning unit.

The Luxaire Oil Fired basement air conditioning unit.

THE C. A. OLSEN MANUFACTURING COMPANY • • ELYRIA, OHIO

THE *Luxaire* HEATING & AIR CONDITIONING UNITS

"Grand Rapids Dealers *save 25% to 50%* OF INSTALLATION TIME WITH Viking BLOWER PACKAGES"

Says John Carman—Earnest Viking Representative

"All of the many Dealers and Jobbers I get to visit are frankly enthusiastic about the Viking Blowers' exclusive design features that add up to the easiest, most profitable installation in the business."

SERIES 400
"Qui-Ette" Streamline Models for Popular Size Furnaces up to 28"

SERIES 300
For Larger Furnaces up to 36"

THE "777"
WITH DIRECT DRIVE
For Small Furnaces up to 18"

"In Grand Rapids Blower Package Business is Increasing and Savings on Installation Time are Really Important", says
BOB FRIESTAD, Grand Furnace Co.
1361 Grove Place, N. E., Grand Rapids, Mich.

"Converting gravity warm air furnaces to winter-air-conditioning by installing a blower package, has become a greater part of our dealers' total business. The more Viking installations they make, the more they appreciate the time saving Viking Blower features. They mean plus profits on every job."

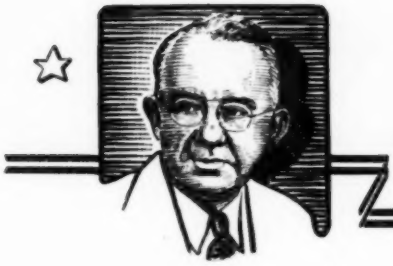
ARNOLD VAN DYKEN, Van Dyken Heating Co., 715 Eastern Street, Grand Rapids, Mich.

"Under today's high operating costs, I try to make every working minute count. That's why I go for the easily installed Viking Blower Package. One man can position the Cabinet and install the blower. The filter ledge snaps out and makes working inside of the cabinet as easy as working outside. The 45 minutes, and more, that we save when the blower is a Viking means more profit and a better use of manpower. Over a year's time this sure adds up."

JOHN J. FALICKI, Faultless Heating Co., 1134 W. Leonard, Grand Rapids, Mich.

"The extra quality features that come with a Viking blower at no extra cost are things the customer can see and appreciate. The spring thrust takeup that gives the quiet blower wheel operation; the large oil cup that makes lubrication necessary only once a season; and the heavy, good-looking cabinets are good sales points. Viking quality also means that I'm not going to spend valuable time chasing on profit-wasting call-backs."

Viking
AIR CONDITIONING CORP.
5601 Walworth, Cleveland 2, O.



Arnold Kruckman's

Washington Letter

The Other Side of the Political Page

THIS WILL BE a review of the present administration of our Federal Government and how it got that way, the forces behind those in public office and how they can come close to controlling the selection of those to run in an election.

The Democratic party picture looks thus on the eve of the nomination of a candidate to carry its banner for the presidency. The average person who calls himself a Democrat, who works every day, pays his taxes, believes everything he reads or hears about the wonders of his party, doesn't stop to think about the consequences but lives from day to day. This group is at the bottom of the heap because it believes in the simple things of life. This large group is in favor of nominating Senator Estes Kefauver.

Who Constitutes the Democratic Party

The upper level of the party is made up of the intellectual Liberals and the bits and pieces of the New Dealers and Square Dealers, Fair Dealers, and other kinds of dealers who represent that conglomerate of political and social philosophy which is a little Communism and a great deal of Socialism, are not certain about any of the dozen candidates. In between these two groups are the hard-headed, practical manipulators who are called the City Bosses. They are really the element who control the Democratic Party. They are the hard core, dominating the eight million who are directly on the Federal payrolls, and the other twenty million who each month receive the Federal checks. They also dominate, to a large extent the business people who get favors from the Federal Government. Their influence spreads so widely that it defies imagination to give more specific details. Sad as it may be, this is the crowd in New York City, in New Orleans, in Florida, in Chicago and on the Pacific Coast, which is spark-plugged by the monopolists who have infected the Government itself, and who have brought into Government their complacent tools who have bent the forces of Government to their own evil ends.

The City Bosses, Professional Politicians

Unless there is an amazing new energy shown which will enable the more numerous better element to seize control of the Democratic Party when the Convention begins, it will be this professional element called the City Bosses which will expertly cause confusion and throw bewildering dust in the air until the delegates choose the candidate the professional element regards as most amenable to the profit purpose. It is wise to remember that selfishness and pocket-book interest is expected to influence the selection of a candidate more than any appeal to patriotism. The Democrat bosses are absolutely certain that the Democrats will elect the next President; and they are betting that profit-drag is the motive which will enable them to win. They think this will smother the contempt for the actions of Truman, for the graft and crookedness and downright thievery which has been exposed to public light in recent years. Don't for a minute assume that the Democrats will be a pushover! They, obviously, not only have $70 billion to $100 billion in Government funds which may be used to influence the way people vote, in addition to the millions of persons who are placed at key points in the Federal machine in all parts of the country. It will not be easy for the Republicans to overcome this handicap unless they can generate such an astounding revolt against the whole business that the people will vote for reality rather than for politics. Only if party labels can be made as ridiculous as they now are, and orthodox politics be brought home to the voter for what they are, will the people vote for principles and issues rather than for catch words and shibboleths and the products of public relations experts and specialists.

Bear in mind most predictions, forecasts and prophecies either are hopeful imagination or pure guesswork under conditions that puzzle all except the professionals in the background who are trying to shape the shifting trends to their own purposes. It is astounding, here in Washington, you *find* among those who usually are well informed, that they are very uncertain as to what is really happening. That uncertainty probably grows out of a condition that is rep-

Washington Letter

resented by a conference recently held in New York, in which fifty organizations and thousands of persons participated, whose ideas for reform and re-establishment of American principles on the bases of the Founding Documents of the nation was the subject for discussion. It is this element, usually submissive, bewildered and overwhelmed by a sense of futility, whose attack on the existing conditions supplies the unpredictable. It is unquestionably this revolt against machine politics, and the prevailing tempo in the Government machine, that gave the Justices of the U. S. Supreme Court the courage to rule against the Executive in the steel seizure. Never minimize the effect of an aroused public sentiment on the Courts as well as on any other parts of the Government.

The Leading Candidates

Who are the Democrat candidates? Omitting the favorite sons who have had courtesy designation, the list includes Senator Estes Kefauver, of Tennessee; Senator Richard B. Russell, of Georgia; Governor Adlai Stevenson, of Illinois; William Averill Harriman, of New York; Vice President Alben Barkley, of Kentucky; Senator Robert S. Kerr, of Oklahoma; Senator Brien McMahon, of Connecticut; Senator Paul Douglas, of Illinois; Associate Justice of the U. S. Supreme Court William Douglas and Oscar R. Ewing, of New York, the Federal Security Administrator. This is the list to be contemplated seriously as probably including the candidate the Democrats will nominate; and it is by no means certain who will get the approval of the City Bosses. There is even still a very remote chance that Truman himself may be nominated — and don't discount this possibility. The Democrats consider Truman's steel seizure, no matter what the Supreme Court may have done, one of the master strokes in party politics. It is credited with having arrested Labor Union defection. Here in Washington they will tell you that it recaptured the Labor vote, and has made Truman the venerated hero of the Unionists.

Senator Estes Kefauver

It is generally conceded, at this time, that Kefauver and Russell between them have the votes to control the Democratic Convention. Senator Kefauver got over 80% of all popular votes cast in the Democratic primaries. The dispassionate Gallup-Poll type of mind will tell you this does not mean what it seems to mean. They say, first of all, Kefauver, by reason of his television hearings on crime in the big cities, has the bitter and inflexible opposition of the City Bosses. They tell you also that he does not have the full support of the left-of-center groups, which would include many of the New Dealers, Fair Dealers and the other more extreme Liberals. But it is admitted even by the cooly impartial sharpshooters that Kefauver has the Union Labor vote. As a matter of fact, it appears that this mass element is for Kefauver. It is this emotionally responsive group that has made Kefauver's pre-convention campaign so successful. Even the City Bosses privately admit that Kefauver would probably be elected President, over Taft and Eisenhower, if he is nominated. But the City Bosses know that one certain part of a Kefauver Administration would be a simple, old-fashioned drive against obvious crime. In the middle of June, Dr. Gallup said 35% of all voters everywhere, except in the South, would vote for Kefauver and 55% for Eisenhower; but in the South, 51% would vote for Kefauver and 35% for Eisenhower. The Southern aspect is rather puzzling because in Florida Kefauver won in the cities and in the centers where the transplanted Westerners and Northerners live, while Russell had an overwhelming vote in the sections populated by the rural Floridians who are part of the solid South. In California Kefauver won an overwhelming vote, after the Florida primary, which again made him the problem child for the City Bosses. The latest assay of the source of Kefauver's vote credits it to the Unions, to the farmers, to the left-wingers and to the Americans for Direct Action.

Several years ago this correspondent had the pleasure of meeting Senator Kefauver. He was immediately impressed by his long, bony, friendly face and smiling eyes. Without in the least being like him, the tall, rather shambling, large-boned figure, and the homely speech, made one think of Lincoln. There is much in Kefauver that appeals to the average person because he is essentially an example of the ordinary person.

What sets him apart is his instinct for timing. This instinct is often that quality which touches a man for destiny. It is a sort of catalyst which makes him do the right thing at the right time. If you have any contact with Kefauver you realize that he has this quality which is felt as the touch of destiny; it brings him, who has it, close to the easy going kind of people. Such men draw others to them like a magnet. It

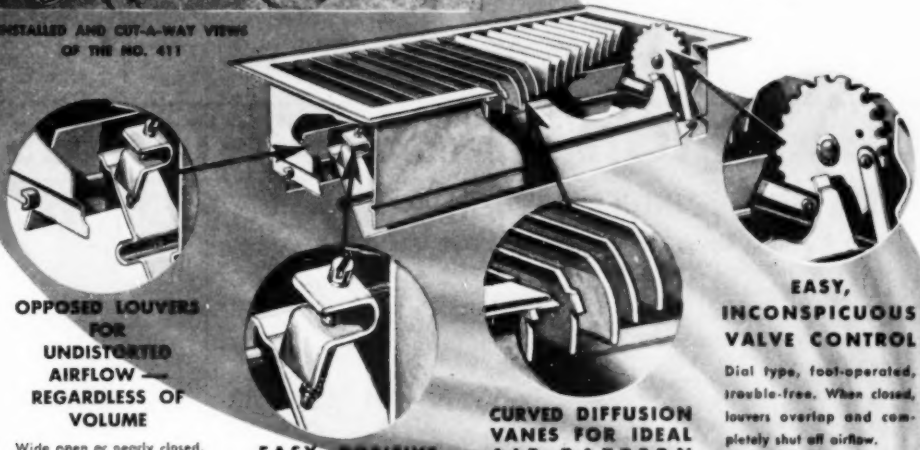
(Continued on page 28)

No. 411 "DIFFUSAIRE"

A *NEW* and VASTLY *SUPERIOR* FLOOR DIFFUSER for *PERIMETER* HEATING!

Take a look at the details of the H&C No. 411 "DIFFUSAIRE" given below. Here again is concrete evidence that the finest register for every type of installation is to be found in the H&C line. Its structural superiorities provide unmatched efficiency and control of air distribution. And though it is built to the very highest standards of quality, it costs no more than the ordinary register in this category.

INSTALLED AND CUT-A-WAY VIEWS OF THE NO. 411



OPPOSED LOUVERS FOR UNDISTORTED AIRFLOW — REGARDLESS OF VOLUME

Wide open or nearly closed, the airflow is always undistorted—in the same vertical plane, an H&C exclusive. (4" and 6" widths.)

EASY, POSITIVE VOLUME CONTROL

Adjusting screw can be easily and quickly set to balance the system. Does not interfere with closing the valve.

CURVED DIFFUSION VANES FOR IDEAL AIR PATTERN

Set at the factory to provide a fan-shaped air pattern to blanket the cold wall or window area. May be adjusted to any pattern desired. Curvature of blades also reduces resistance.

EASY, INCONSPICUOUS VALVE CONTROL

Dial type, foot-operated, trouble-free. When closed, louvers overlap and completely shut off airflow.

Made in standard sizes from 2¼ x 14 through 6 x 14. For complete details see your H&C Jobber or our current catalog No. 52.

MEMBER INDOOR COMFORT

HART & COOLEY MANUFACTURING CO.

500 EAST EIGHTH ST., HOLLAND, MICH.
In Canada Hart & Cooley Manufacturing Co., Fort Erie, Ontario

WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

isn't what they say, it's what they are. They inspire confidence; and that uncanny instinct for timing seldom lets them make a mistake. They have what the ancients called a daemon. They may call it a hunch, or playing hunches, but they trust their instinct blindly. And so long as they are honestly consistent with the guidance they get from their hunches, they go places. But when they begin to compromise and violate the instinct, they go wrong. Their trouble usually, sometime or another, stems from going contrary to the deep, true instinct, and this deviation always muddles the pool of their perception, and they lose their uncanny sense.

One of the greatest assets Kefauver has in politics is his red-haired wife, Nancy. Her father was a Scotch ship engineer. Her mother was an American from Tennessee where she was visiting relatives when she met Kefauver. He followed her to Scotland and courted her there. She has worked with him and for him, night and day; has travelled by plane, train, car, and has shaken many hundreds of thousands of hands, and attended ladies' luncheons and has made a tremendous hit. Kefauver is short of money in his campaign; but apparently is driving forward on faith as well as on substance, and he is going places. There is no doubt that Kefauver will be the candidate if the demand of the voters means anything. What the City Bosses would like is to use his magnetism, and political magic, by nominating Governor Adlai Stevenson for the Presidency, and placing Kefauver in the Vice Presidency.

Governor Adlai Stevenson

Stevenson, who is the darling of the City Bosses for some reason or another, is the son of a former Vice President of the United States. It is significant that Stevenson carefully praised Harriman fulsomely, at the Roosevelt College dinner in Chicago, but carefully avoided making any endorsement of his candidacy. Stevenson insists that before he can be nominated they must find someone who will acceptably replace him as Governor of Illinois. There is no doubt that he is the choice of the Northern Democrats. They think he is the only Democrat who can beat Eisenhower. There is no question about his acceptability to the Bosses. Stevenson has the sort of makeup that enables him vigorously to challenge what the Bosses stand for and yet to avoid a crashing collision with their interests. Stevenson is smooth, fits into upper-bracket Society, has an extremely supple mind, and sounds sweepingly sincere. Yet, he also has the faculty of saying things in such a way that he does not commit himself irrevocably. The Liberals don't like him; particularly the Liberals who are led by Senator Hubert Humphries of Minnesota. Humphries, and his group, want planks in the platform, that are regarded with distaste by those who like Stevenson. Stevenson has been amazingly agile in taking the position that he doesn't want to be nominated, and yet leaving the situation in such a way that it is wide open for his followers to nominate him without tieing him up with elements and with conditions that he might find troublesome.

Royal Heaters Inc., manufacturers of the famous Royal Jet-Flow, Mid-Jet and Forced Flow heating units, America's most advanced gas heating equipment.

Senator Richard Russell

Senator Richard B. Russell, of Georgia, in the opinion of this correspondent, is the best man the Democrats have as a potential candidate. This correspondent knows him personally very slightly. Russell is exceedingly good stuff for the U. S. Supreme Court. He is calm, human, patient, substantial, wise, and is broad with a clean outlook, although he is a realist. Senator Russell is that rather unusual type of man in politics who is an American before he is a Democrat, a Republican or a Southerner. His logic would not be ruined by his emotions; yet, at the same time, he would have a great deal of the milk of human kindness. It is curious that the North is just beginning to realize that there is a Senator from Georgia named Russell. This in itself is very revealing. Only a man who is not showy, not noisy, not a professional Southerner, and not a professional Senator, would by this time have failed to impress himself upon the North and the West. It was only recently that some of the men of the best stature met Russell in New York. They are just beginning to realize what an asset he might be in the Presidency, regardless of the label under which he might be elected. While he is an attractive person he is not the kind of man who would lend himself easily to the essential ballyhoo of the public relations experts. By no means does this signify that he isn't likeable and genial; he simply is not ostentatious and flashy and professional in his efforts to capture attention and good will. By way of contrast, it is no particular discredit to Kefauver that he doesn't have the broad, matured, experienced and educated concept of the world that you find in Russell. Kefauver is just a genial, capable, kindly boy from the country touched by genius, who has the average clear intelligence and the bedrock sense of affairs you find in the average successful business man in the smaller communities. Kefauver would no doubt tackle affairs with the best sense this background would bring.

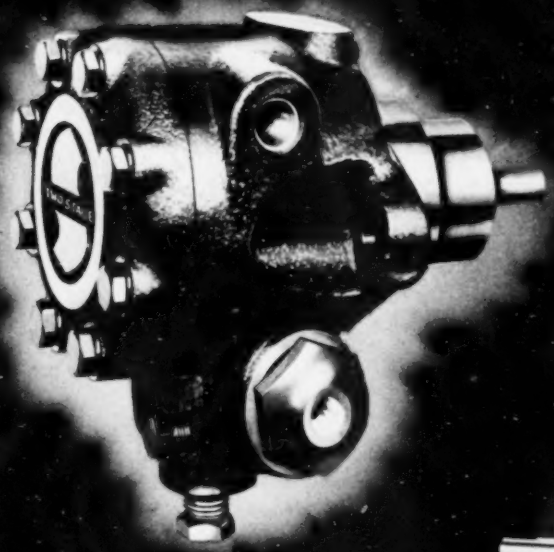
Russell, on the other hand, has read widely and deeply and has studied history, past and present. He may not exactly be a portrait of the gentleman of the Old South, with the wide collar and the mint julep, but he actually is the picture we non-Southerners make for ourselves of the South of the present and the past. His father was a Judge, one of those leisurely, classically backgrounded, dignified gentlemen who really sought to serve his neighbors, his community, his state and his nation. He wanted to be Governor, but never made it. His son did become Governor of Georgia. Senator Russell is that modern version of a Southern gentleman conditioned both by the past and the present. He started out as County Attorney in Georgia; next he was in the Georgia House of Representatives; then he became Governor and finally Senator. He is now Chairman of the powerful Senate Armed Services Committee. Since, despite the City Bosses, Russell may become the Democratic candidate, it is useful to know what he would do as President. He would cut down foreign aid; make the programs more mutual; and give more thought to the differences in the systems and cul-

(*Continued on page* 150)

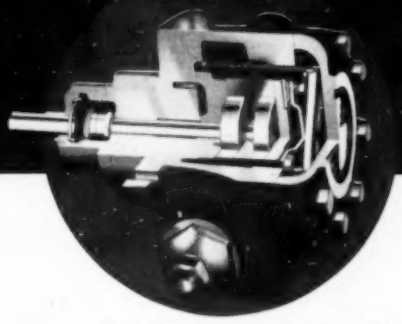
• ANOTHER REASON WHY SUNDSTRAND IS FIRST IN FUEL UNITS •

NEW! SUNDSTRAND MODEL H TWO-STAGE FUEL UNIT

Patent applied for



- ✓ Self-purging
- ✓ Simpler
- ✓ More compact
- ✓ Easier to service



New, unique, internal porting for smooth, quiet operation!

New simplicity . . . new compactness . . . new unique internal porting . . . easier servicing . . . plus all the outstanding advantages of Sundstrand self-purging, quiet operating, efficient, Rota-Roll pumping are packed into this brand new Model H, Two-Stage Fuel Unit. With an oil circuit that automatically purges all air . . . and with Sundstrand's exclusive leak-proof valve construction . . . you can't get more year-around dependability, velvet-smooth action, and silent, uniform operation *anywhere* . . . for long line, high lift oil burner installations. The Model H is recommended for two-pipe systems having vacuum requirements up to 20 inches, and where the utmost in two-stage performance is required. It was the hit of the OHI Show. Get complete data and prices . . . now!

MORE FACTS ABOUT FIELD-TESTED MODEL "H" FUEL UNIT

For 3, 6, 10, 14, and 20 Gph firing rates . . . Strainer capacities —6, 10, 15, 20 Gph . . . Solenoid Valves optional on factory assemblies only . . . Interchangeable with Sundstrand Models S-1, R, J, or K.

INDIVIDUALLY TESTED AND CERTIFIED

SUNDSTRAND

SUNDSTRAND FUEL UNITS

SUNDSTRAND MACHINE TOOL CO.

HYDRAULIC DIVISION, ROCKFORD, ILL.

Made in Canada by
John Inglis, Ltd., 14 Strachen Ave., Toronto

Murray Schwartz, left, owner of Schwartz Appliances Inc., Inwood, N. Y., talking about Electronic Moduflow with Honeywell salesman Roy Monsrud

"... Are you a thermostat jiggler?"

"That simple question sells HONEYWELL ELECTRONIC MODUFLOW systems for me," says Murray Schwartz, New York dealer!

"Customers almost always have to *admit* they are!

"That's because ordinary, *mechanical* systems for controlling heat cannot adequately cope with sharp outside temperature changes. When the house cools off, people get that chilly feeling and those cold drafts, before the thermostat calls for heat. So they push the thermostat up until the system starts. On the next cycle, it's the same thing all over. Up and down, up and down—and the temperature goes right on see-sawing!

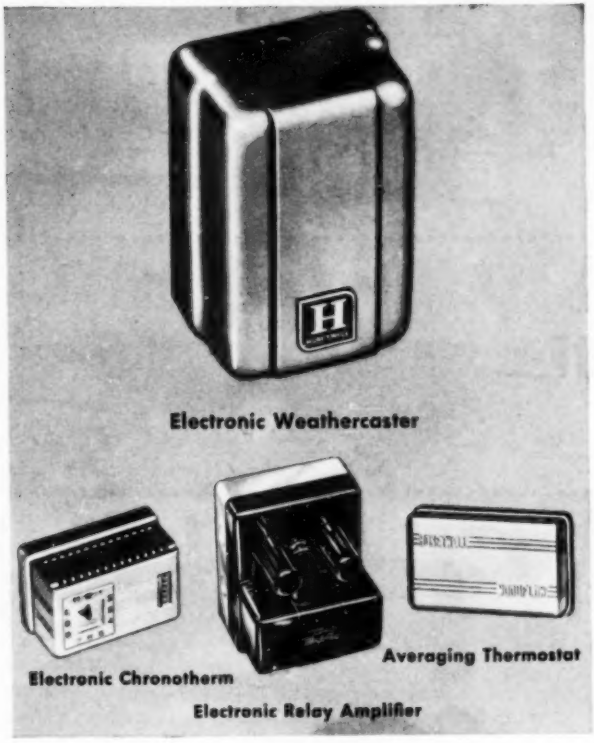
"But with Electronic Moduflow, home owners never have uneven temperatures. Because Moduflow controls, being electronic, are faster-acting and more sensitive. More than one thermostat is used inside, for balancing temperatures; a special control, the 'Electronic Weathercaster,' is stationed *outside the house* for 'tipping off' the heating plant ahead of time.

"Electronic controls for heating is in step with the times. Heating dealers will see the day when every home owner will *demand* them."

☆ ☆ ☆

See the next page for details on how Dealer Murray Schwartz sells HONEYWELL ELECTRONIC CONTROL SYSTEMS in New York!

Another Plus-Profit Idea from Honeywell



"The Honeywell Electronic Weathercaster captures the imagination of my customers"

"What other system provides home owners with an electronic device situated *outside the house* that senses changes in the temperature—and, like magic, relays signals to the plant inside?

"When I'm in a customer's home, I always bring out an *Electronic Weathercaster* and demonstrate it. And it never fails to arouse interest.

"With interest once aroused, I cover facts about the rest of the system—the amazing sensitivity and the even heat it helps to achieve; how none of the sensing elements in an electronic system contain moving parts, so there's nothing to wear out or replace; and how it can readily be adapted to almost any type fuel.

"The Electronic Moduflow story always creates interest, conversation and, ultimately, sales."

☆ ☆ ☆

For the complete story on Electronic Moduflow, call your local Honeywell office; or write Honeywell, Dept. AA-7-159, Minneapolis 8, Minn.

Listen to what Murray Schwartz' customers have to say about Electronic Moduflow!

Mrs. Manuel Stang, Lawrence, Long Island, says:

"Electronic Moduflow has made our home a pleasant, warm place to live in, for the *first time*. No more cold floors, chilly rooms. And my husband and I have both noticed we're not paying as much for fuel, either."

Mrs. Stanley Finley, Woodmere, Long Island, adds:

"It cured an uneven temperature situation in our home that was really getting serious. But we can't get over that *outdoor* thermostat! It's *'way ahead* of the weather—all our friends marvel at it."

MINNEAPOLIS **Honeywell**

First in Controls

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Here, at a glance, is a quick review of more than a century's progress in the delivery of Ryerson steel.

The original Dobbins made their plodding rounds from a single small iron store. Today, their mechanized successors speed delivery from a network of fifteen huge steel-service plants.

And, while the first Ryerson wagon carried such products as saddle tree, horse shoe and boiler iron, today's giant trucks deliver an almost endless variety of carbon, alloy and stainless steels.

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While current demand may deplete supplies of some sizes, our over-all stocks are large and complete. And you can always count on the same friendly will to help that steel buyers have found at Ryerson for 110 years.

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Year 'Round Air Conditioning

A GREAT AMOUNT OF work is being done in the fields of heating and cooling. The warm air heating dealer and sheet metal contractor may well look upon summer cooling for the home—year 'round air conditioning—as one of the biggest opportunities for his business expansion that have come his way since the advent of forced air heating.

Aside from new home starts, the residential market offers a great potential for central station, year 'round packaged air conditioners. The Census of Housing shows close to 12 million homes (almost half owner-occupied) are heated by warm air central heating plants using ducts for air distribution which could be converted to year 'round heating and cooling air conditioning systems.

The full development of the residential market rests upon the know-how and sales effort of the warm air heating dealer, who is ideally qualified through his engineering and installation experience to add summer cooling to his winter air conditioning business. Many are successfully doing so.

Air conditioning is no longer a luxury item. It doesn't just keep a building warm or cool — it has many other features of year around usefulness. A home can be kept cleaner by reducing normal infiltration. There is less noise from the outside because windows are kept closed. It has its health aspect, too — for example, sufferers from hay fever find that air conditioning gives them relief from this seasonal malady. Then there is the importance of humidity control. This item alone is least understood by the public. Control humidity and you control comfort.

True air conditioning is the result of five functions of the equipment:

1. TEMPERATURE must be controlled within the conditioned space to meet the specific needs of human comfort. A correctly designed and operated air conditioning system will maintain conditions every hour of the day, lowering or raising temperature as required.
2. AIR CIRCULATION must be provided to maintain uniform temperature and humidity conditions throughout the conditioned space without causing occupant discomfort.
3. HUMIDITY control is important to human comfort. Humidity conditions are maintained at all times at a comfortable level.
4. CLEANING. For health and comfort, and to protect furnishings, the air must be kept clean. All circulated air may be cleaned by filters or an electrostatic air cleaner.
5. VENTILATION is essential to health and comfort. A well designed air conditioning system, besides maintaining temperature and humidity control, continually replaces stale, odor-laden air with filtered, outside air conditioned to meet the temperature and humidity requirements.

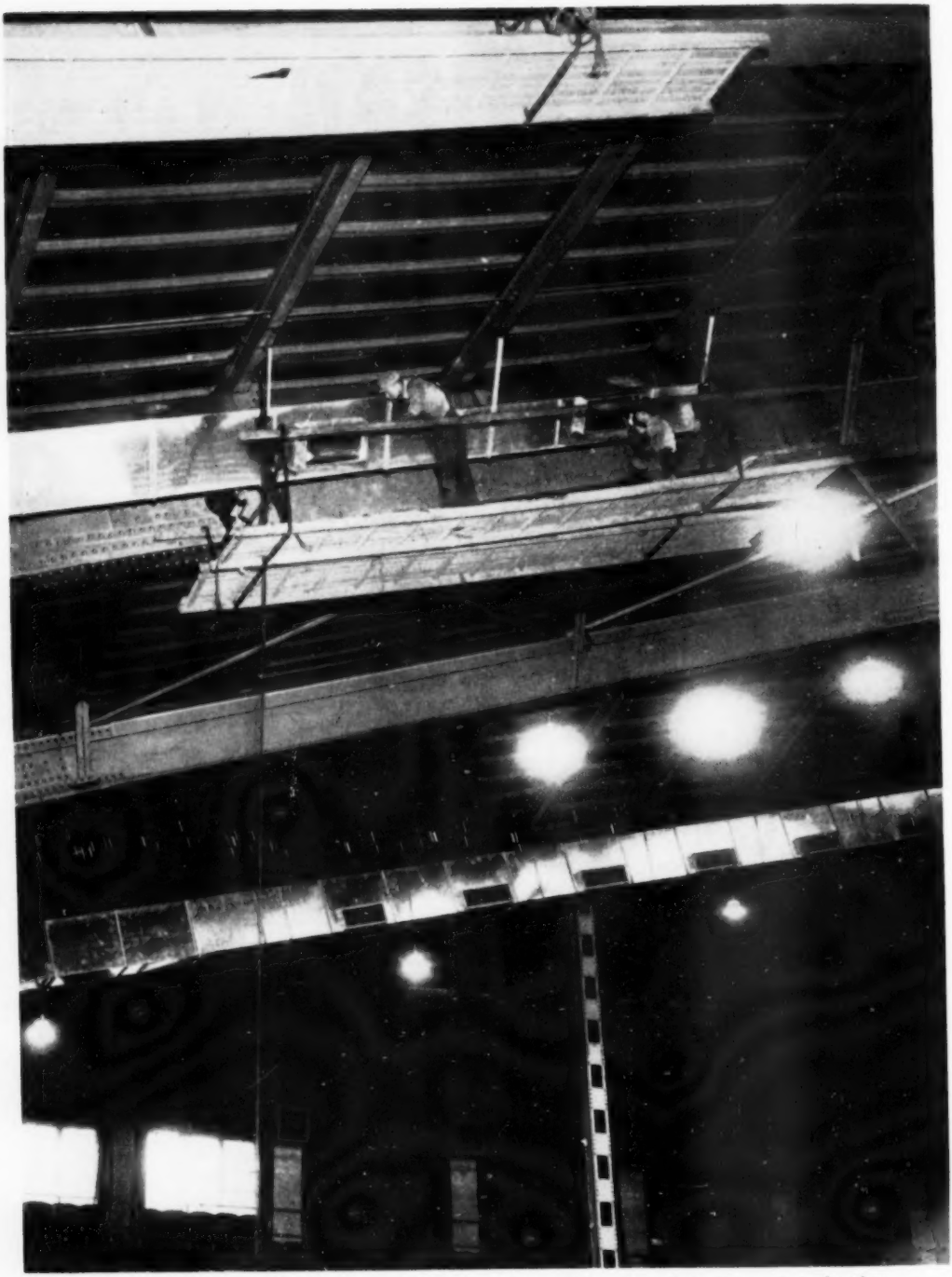
When the equipment is installed in a new home and amortized over a 20 year period with the normal cost of the building, there is hardly any noticeable increase in the monthly payments.

Probably operating costs are more important to the prospective owner than is the original investment. The contractor should therefore make operating information available as much in detail as he can.

Speaking of the costs of adding air conditioning equipment to a new building, we are told that when year 'round air conditioning is provided in a home many of the normal requirements of an unconditioned building can be eliminated and the overall building conditions will provide a reduction in the building construction cost.

There are a number of housing projects being erected at the present time where a completely air conditioned home sells for $12,000 upward.

Estimates of the potential number of residential air conditioning installations may seem optimistic — but actually may be conservative. We remember when 10,000 winter air conditioning systems were sold per year. Last year there were 650,000. In 1950, there were 893,000.



The supply air ducts for the Chicago International Amphitheatre, 80 feet above the arena, are mounted against the truss knee braces at a 45 degree angle to the vertical. The supply air for the balcony is discharged from the risers located against the outside wall.

Political Conventions Enjoy Air Conditioning

The coolest political conventions in history are being held this month at the newly air conditioned International Amphitheatre. Larry Paul, Narowetz Heating and Ventilating Company, explains how a new duct system was added to an existing air heating system to provide the new outlets required and how the old ducts were utilized for a return system.

When the Amphitheatre in Chicago was selected as the convention site, it was done so on the promise that the hall would be air conditioned, for it is known that Chicago in July can be hotter than the debates on the convention floor. The promise was simple, but the actual work necessary to make the promise a reality was something else.

The Amphitheatre is a wonderful convention hall and a remarkable piece of construction providing 255,000 sq ft of exhibiting space and capable of seating 12,000 people. For those who do not know it, a little history of the present building would be interesting.

Present Amphitheatre built in 1934

The old Dexter Park Pavilion burned to the ground along with the Live Stock National Bank of Chicago Exchange Building and hundreds of acres of pens during the Union Stock Yards fire in July 1934. The smoke could be seen from forty miles away. Monday morning, the day after the conflagration, thousands of curious spectators looked at piles of twisted steel and rubble. It appeared as if nothing could be done with these acres of ruin, but even while the fire burned, interested parties were planning to replace the destroyed buildings with more up-to-date structures.

A. Epstein and Sons, Inc., Architects and Engineers, were commissioned to rebuild the Amphitheatre with the understanding that it would be completed in time for the world famous International Live Stock Exposition held every year during the first week of December. Less than five months to build a permanent exposition building — from the drawing board to occupancy!

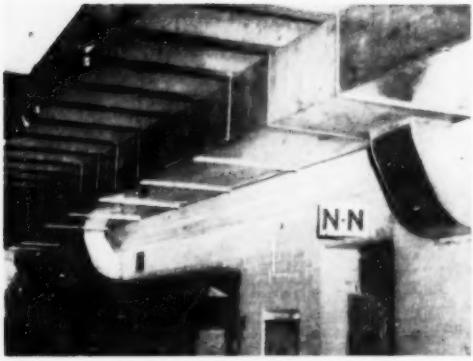
Before the fire was completely extinguished, contracts had been let and much of the rubble removed. William A. Pope Company and Narowetz Heating and Ventilating Company were selected as the mechanical contractors, and even though materials and labor were plentiful, time was at a premium. Work proceeded at a feverish pace, and in the late fall when the thousands of show animals began arriving, they found the new Amphitheatre ready and waiting, a building with a main exhibition arena, consisting of a central pavilion of steel construction, 200 ft wide by 310 ft deep, flanked on the north and south by two-story exhibit wings of reinforced concrete construction. The arena in the central pavilion has an unobstructed floor area of nearly 30,000 sq ft, measuring 123 ft wide by 238 ft long. The arches spanning the 200 ft width are 45 ft high at the haunch and 80 ft high at peak, and are spaced on 21 ft centers. The roof is of precast cement tile carried on steel purlins. The arches carry the balcony and part of the main floor framing.

Original builders get air conditioning contract

Now, almost 20 years later another rush job had been requested. Air conditioning was to be provided for the main arena where thousands of delegates would meet to select a candidate to carry the party's banner through another campaign. This job was again turned over to A. Epstein & Sons, who immediately went into conference with contractors and selected when possible the same contractors that worked with them on the original rebuilding, among them William A. Pope Company and Narowetz Heating and Ventilating Company.

Time was again of prime importance, but unlike the original rebuilding job there was a tight labor market, critical shortage of materials and government restrictions. These were all taken in stride and before many days had passed, basic designs were agreed upon and orders had been placed with equipment manufacturers.

An investigation of the system installed in 1934 revealed there were four main supply systems, one located in each of the four corners of the building at the roof. Each system had a capacity of 40,000 cfm. Vento coils were used with both outside and return air connections. A portion of the air was introduced at the roof line to supply the balcony seats and the remainder introduced below the balcony to serve the mezzanine seats. The return air inlet was near the roof level and fed directly to the fan rooms. Although the principle of air introduction was correct, it did not provide for any air to be delivered to the exhibition area. When the system was designed, it was not felt that conditioned air should be provided for this area.



Return air ducts in a second floor corridor, taking return air from the south balcony.

Branch ducts — which formerly supplied air — now return it to the booster units.

An additional 10,000 cfm is handled by each of four suspended booster units, making a total of 280,000 cfm of air circulated.

Installation of ductwork presents problems

The present fan rooms were of sufficient size that filters and cooling coils could be installed without relocating the fan or the heating coils. The fans could be increased to 150 per cent of the existing capacity, bringing the air quantity for each of the four systems to 60,000 cfm. The only work required on the blowers was to increase each of the motors from 25 to 40 hp. The next problem concerned the ductwork. Would it handle a 50 per cent increase? It was found that the original velocities had been used in accordance with accepted practice of 1934. The main ductwork would handle the increased air volume without exceeding a velocity of 2,000 fpm. The only problem remaining was to see that the conditioned air reached persons on the arena floor.

No ductwork was to extend below the main trusses which are 80 feet above the arena floor. As the main fan rooms are located high and there are no columns in the arena, as well as any hidden space for risers, it was decided that booster units should be used to reverse the travel of the air in certain areas.

Ductwork was extended from the main trunk lines, paralleling the two long sides of the arena. These branches, about 60 feet long, were carried above the bottoms of the trusses and parallel to the knee braces; this forced the ducts to be installed at an angle of 45 deg to the girders. Double deflection grilles were installed on the side and since the duct is at an angle, the grilles discharge downward towards the arena floor. Grilles were also installed in the present drops from the main trunk duct to serve the balcony seats. The ducts serving the area under the balconies were cut off from the supply and connected to a new return air main, installed in the adjoining corridors, which were connected to the four new booster units. With this arrangement, all possible air was directed to the center of the arena and returned to the main supply units or the booster units along the outer perimeter of the building.

Booster and refrigeration systems installed

The booster units, which are equipped with filters and cooling coils, discharge the air at a lower level on the east and west ends of the arena where it was possible to do so without making the ductwork conspicuous.

Cooling is obtained from two Carrier centrifugal machines, having a total capacity of 1000 tons. Chilled water is piped to new Aerofin water coils in each of the four main supply systems and to the four Carrier booster units of 10,000 cfm capacity each.

Condenser water for the refrigeration machines is obtained from a deep well, and after passing through the machines, half of the waste condenser water is sprayed on the arena roof to reduce the solar load and the remainder is discharged to the sewer.

Washable type filters selected for a maximum velocity of 500 fpm are used throughout and Minneapolis-Honeywell supplied the temperature regulation.

Narowetz Heating and Ventilating Company, Chicago, furnished and installed the air distribution equipment.

The attractive new cafeteria at the Powers Regulator Company, Chicago. On the opposite walls may be seen a variety of cookie cutter designs formed out of chrome stainless steel to enhance the decorative scheme of the room.

Decorating with Stainless Steel

GIANT SIZE "COOKIE cutters" are used to decorate the walls of the new cafeteria at the plant of The Powers Regulator Company, Chicago. The attractive designs were originated by R. C. Williams, prominent Chicago designer. They were fabricated in the company's sheet metal shop.

The material is .032 in. thickness chrome stainless steel, cut into strips $1\frac{3}{8}$ in. wide and bent to form the desired shapes by attaching them to the base at a 90° angle. The base of the cutter is punctured to receive the $\frac{1}{8}$ in. by 3/16 in. tongues formed on the lower edges of the strip. A margin of $\frac{1}{4}$ in. is left around the outer edge of the base as openings for the tongues. The tongues are inserted in the openings, then are flattened against the back of the base. No soldering is necessary.

Other malleable metals, such as copper, brass, aluminum, galvanized or tin plated sheet steel, sprayed with clear lacquer may also be used in place of stainless steel.

The bases of the cookie cutters were cut by a standard metal cutting band saw. The edges have been finished off by hand filing and sanding.

The method of fastening the displays to the wall utilizes a wooden block about 7 in. square by $1\frac{1}{4}$ in. thick which is securely fastened to the wall. This block has on the top a groove $\frac{1}{8}$ in. wide by $\frac{3}{4}$ in. deep into which a metal bracket is set to hold the cookie cutter securely in place. The metal bracket is attached to the rear of the stainless steel base with solder.

Giant size "playing card" cookie cutters, showing the method of affixing the sheet metal to the walls by means of tongues inserted in slots in the bases.

Domestic Heating with Electricity

S. Konzo

Professor of Mechanical Engineering
University of Illinois

In consumer magazines, frequent reference has been made to the possibilities of large scale use of electricity for heating of homes. The impression is gained by the homeowner that electrical forms of heating will soon supersede existing forms based on the combustion of fuels. In fact, every heating contractor has had the experience of trying to "explain" the present status of electrical heating. In many cases, the heating contractor is not sufficiently acquainted with the new developments in the field, or is so swayed by promotional literature, that he is unable to present a matter-of-fact comparison of this relatively new form of heating medium with the existing forms.

The purpose of this article is not to "prove" that electrical methods of heating are impracticable, nor that they are too expensive to operate, nor that they are figments of someone's imagination. The main purpose is to present in a simple form:

(a) Existing methods whereby electricity can be used as the heating source,
(b) Possible methods for storage of heat and utilization of off-peak power, and
(c) Charts for comparison of electrical forms of heating with those utilizing oil and gas fuels.

Types of Electrical Heating Devices

A number of electrical heating devices have been developed and several unusual arrangements have been tried during the past twenty years. Initially a larger number of these arrangements were used in the Puget Sound area of Washington; at a later date a number of installations have been made in Eastern Washington, the Tennessee Valley area, and other areas with low electrical rates and with relatively mild climates.

Essentially, the arrangements can be classified into the following types:

1. Electric radiant-coil heaters, or spot heaters.
2. Resistance coil air heaters.
3. Off-peak storage water heaters.
4. Panel heating surfaces heated with embedded wires, either in building surfaces or in glass surface.
5. Reversed-cycle application, or the heat pump.

Radiant-Coil Spot Heaters

These simple devices were initially of the portable type and were primarily used for supplementary heating when the main heating system proved inadequate. In more recent developments, such radiant-coil heaters have been installed in the walls of bathrooms where instant heating would be available at the turn of a switch. In any case, the demand load of such heaters is small, since they are not required to operate continuously and the cost of operation is not a significant item.

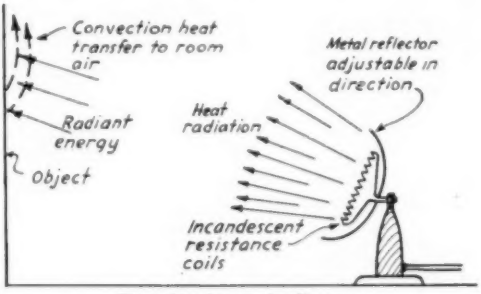


Fig. 1 Spot heater of radiant type

The principle of operation is extremely simple, as shown in Fig. 1. The current flowing through the low-resistance heating element heats the wires to a glowing red color and to temperatures in excess of 1000° F. The heat emission from the wires is of the type designated as infra-red radiation, and this can be focused by means of a metallic reflector in the desired direction. The wattage input to the heater is converted to heat energy, or Btu, with 100 per cent effectiveness. A relatively small part of the heat is transferred to the air as convection heat, but the major portion of the energy is transmitted as radiant energy. This radiant emission will, in turn, strike objects in the room and cause the temperature of those objects to rise. Eventually, the convection currents will transmit the heat to the room air, and the room-air temperature will begin to rise. Hence, the radiant-coil heaters give an instantaneous radiation effect on any surface which is in the path of the radia-

tion; and a greatly delayed convection heating effect which causes a rise in room-air temperature.

Regardless of whether the electrical energy is finally transformed to radiant or convection heat, the so-called "efficiency" of the process can be considered to be 100 per cent. That is, 1-watt hour will give 3.413 Btu, and 1 kilowatt-hour will give 3413 Btu. This 100 per cent "efficiency" will be considered as a standard of performance, and in all later discussions this standard will be referred to as a "Coefficient of Performance" of 1.0. The term "efficiency" has been placed in quotes because in later discussions, reference will be made to coefficients which are greater than 1.0. That is, the so-called "efficiency" would be greater than 100 per cent and such usage of the term is not only difficult to understand, but also misleading. For example, a coefficient of performance of 2, might be considered to be the same as an "apparent efficiency" of 200 per cent, which is meaningless.

Resistance-Coil Air Heaters

An electrically heated furnace which utilizes resistance-coil heaters is a simple modification of the radiant-coil spot heater. The basic element shown in Fig. 2 consists

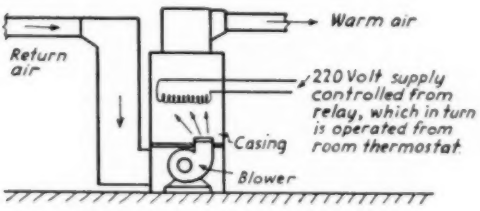


Fig. 2. Elements of electrically heated furnace using resistance heaters

of an air-type resistance heater, a blower, and a casing, with suitable control devices. In this case, the resistance heaters are designed to carry an electrical load which will result in coil temperatures well below the 1000° mark. That is, the coils will not glow red when carrying their maximum current load. The heat which is generated by the coils is transferred to the circulating air, and the efficiency of transformation is considered to be 100 per cent. In other words, the coefficient of performance is 1.0.

From a practical standpoint, a number of details must be considered by the manufacturer in the design of the unit. In the first place, since 1-kilowatt hour is equivalent to 3413 Btu, a 10 kilowatt furnace will have a bonnet capacity of only 34,130 Btuh. For practical purposes, in order to have a bonnet capacity of at least 50,000 Btuh, the furnace would have to be almost 15 kilowatts in capacity. Obviously, it would not be practical to utilize a 110-volt supply source, which would have a current-carrying capacity of about 136 amperes. If a 220-volt source is used, the current carrying capacity is about 69 amperes; whereas a 440-volt source requires a current capacity of about 34 amperes. It becomes apparent that either a 220-volt or a 440-volt supply is needed. These voltages and the high current demand make it mandatory that the electrical wiring be made safe for the homeowner.

Another feature which cannot be ignored is the method of control. If the entire electrical load is thrown across the circuit for the house by means of room thermostat action, dimming of the lights would occur each time the heaters were connected into the circuit. Furthermore, the temperature control would be made difficult when the heat input varies from maximum to zero in the time required to operate the switch. One method of minimizing the load would be to use a number of separate heaters, each of which is separately controlled or which are controlled in steps, so that a larger number of heaters are in use as the heating demand increases.

Off-Peak Storage Heaters

An interesting modification of the electric furnace has been in use for many years in which the electrical switches to the heaters are operated on the on-off principle, but the heat generated is stored until needed. This tends to minimize the tremendous temperature changes in the circulating air as the switch is turned on and off. In other words, the heat storage gives the system a flywheel effect and results in much better control of room air temperatures.

The simple method used in the Grand Coulee Dam Housing Project is shown in diagram form in Fig. 3. In this case, large washed field stones were placed in a well-insulated storage vault. Electrical heating coils, adapted for heat transfer to air, were placed in the vault. These coils were connected to a thermostatic control that tended to maintain the vault at a given high temperature.

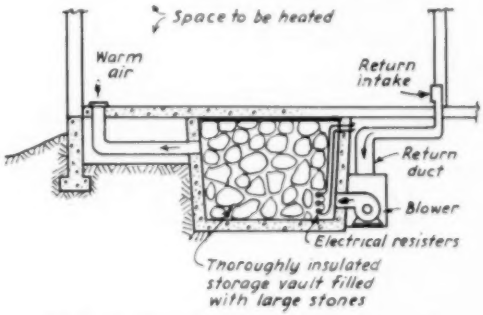


Fig. 3. One form of off-peak electrical storage heater

The blower was connected to the room thermostat, so that when a demand for heat occurred, the blower would start circulating heated air. Obviously the vault required considerable insulation in order to minimize losses of heat from it.

In a system of this type it is possible to utilize the electrical energy for say 16 hours, and then store sufficient heat energy in the stones to carry over the remaining 8 hours when the electrical supply is cut off. In certain areas, such off-peak electric power can be ob-

tained at reduced rates, and the use of a storage chamber becomes economically feasible. Since the specific heat of stone is about 0.2, or about 1/5th that of water, 5000 lb of stone will have the same capacity as 1000 lb of water. Hence, if the stones can be heated up during the off-peak period to say 300° and allowed to cool to 150°, the equivalent Btu will be (300 — 150) (10000), or 150,000 Btu. For a house having a design heat loss of 30,000 Btu per hr., this would take care of demands for 5 hours. If a larger storage is desired, either a larger stone pile is needed, a higher temperature range should be used, or a smaller design heat loss should be obtained.

The use of water as a storage medium is logical since the specific heat of water is about five times greater than that of stone. In the above example, for instance, a 1000-lb water storage tank would serve the same purpose as 5000 lb of stone, provided that the water temperature can be raised to 300°. Since 300° water requires a gage pressure of 52 lb per sq. in. and such pressures require expensive pressure vessels, the use of a lower temperature, and accompanying lower pressure, would probably be more feasible. In one of these water-storage systems, a separate heater room was provided in which the water tanks were located, as shown in Fig. 4.

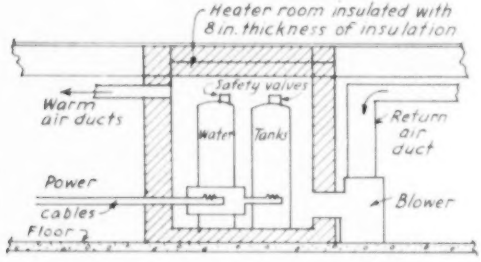


Fig. 4. Water storage tanks for off-peak electrical heaters

The water temperature was limited to a maximum of 200°, and the lower temperature was set at about 130°. The water in the tanks was not circulated; the heat transfer from the heater tanks to the air was the same as that in any conventional warm-air furnace, except that the surface temperatures were quite low. These low surface temperatures necessitated the use of extensive tank surface, so that a number of small water tanks were used in place of a single large tank. The details of design are too numerous to mention in this short description, but the principle of operation is essentially the same as that in Fig. 3. The insulation of the storage room walls was made 8 in. thick.

In both of the systems shown in Figs. 3 and 4, resistance heaters are employed, one being of the air-immersion type and the other of the water-immersion type. In both cases, even assuming 100 per cent efficiency of transformation, only 3413 Btu can be obtained for each 1 kilowatt-hour of electrical energy input. That is, the coefficient of performance is 1.0.

Panel Heating with Electrical Heating Elements

During the past decade a number of forms of panel heating with electrical wires or heating elements have been introduced, as illustrated in Fig. 5. Essentially, these might be considered as modifications of the electric blanket, since the surfaces are warmed with electric resistance wires. The surface temperatures are usually low, not in excess of 120°, but some forms of prepared glass panels are obtainable in which the surface temperatures can be maintained at considerably higher values. Obviously, higher surface temperatures permit

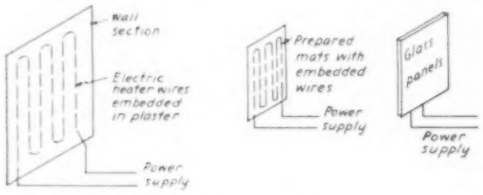


Fig. 5. Some forms of electrical panel heating

a larger radiation of heat, as well as convection heat, but at the same time, the placement of the heaters requires more care in order to avoid "hot spots" and fire hazards.

If the radiation could be made effective so that a reduced air temperature could be maintained in the room without any sacrifice in comfort, the heat loss from the structure could be reduced. However, in the usual residential structure, the radiation from the panel surfaces is eventually converted to heating of the air so that the end result is a room temperature which is not markedly different from that in the conventionally heated structure. Although this is not the place to discuss the essential differences between a conventional warm-air system and a true panel heating system, the advantages of the panel system are not apparent except in a structure where the infiltration or ventilation heat loss is exceedingly large.

On this basis, the assumption can be made that the coefficient of performance is again equal to 1.0 and only 3413 Btu are obtained for each 1 kilowatt-hour of electrical input.

Heat Pump or Reversed Refrigeration Cycle

Up to this point in the discussion, each form of electrical heating device has been shown to have a coefficient of performance of 1.0, and no more. During recent years great interest has been centered on the so-called "Heat Pump," in which coefficients of performance greater than 1.0 have been successfully obtained. Space does not permit a lengthy discussion of this device, which was theoretically conceived before the first commercial applications were ever made. For the purpose of this article, the following simple explanation of the heat pump will be offered.

Consider the illustration in Fig. 6 of a domestic refrigerator. Inside of the refrigerator box is a compressor, which is commonly driven by an electric motor.

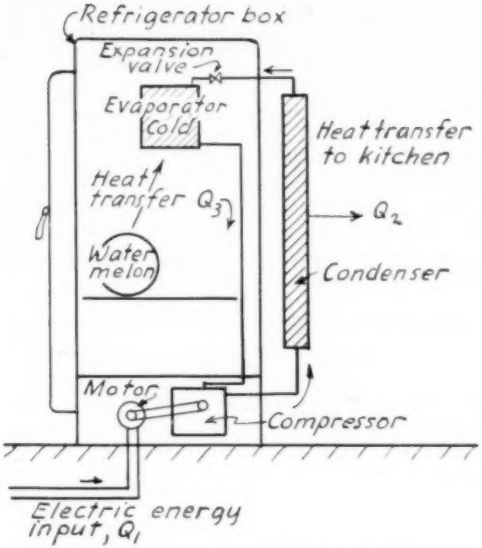


Fig. 6. Simplified Diagram of Heat Balance in Refrigerator. (Diagrammatic only)

Electrical energy, which is equivalent to heat energy Q_1, enters the system at this point. The hot gases from the compressor, which functions like a bicycle pump, are cooled in the condenser and the gases are changed to a liquid. The heat from the condenser is designated as Q_2 and is transferred to the kitchen air by the air circulation over the condenser. The liquid from the condenser then enters the expansion valve and finally into the evaporator, where sub-freezing temperatures are maintained. The temperature of the foodstuffs, such as a watermelon, are reduced in the box and a third heat transfer occurs from the foodstuff to the evaporator. This heat transfer has been labelled as Q_3. If we neglect all the minor sources of heat transfer, then we have left the three major heat sources, which can be equated as follows:

$$Q_1 + Q_3 = Q_2.$$

In other words, the heat equivalent of the electrical energy, plus the heat from the watermelon, is finally transferred to the kitchen air and serves to heat the kitchen. The important thing to note is that Q_2 will be larger than Q_1, depending on the magnitude of Q_3. That is, the heating effect in the kitchen will be larger than the heat equivalent of the electrical energy input, by the amount picked up from the watermelon. In this case, the coefficient of performance will be greater than 1.0. Which is the same as saying that the heating effect in the kitchen will be greater than 3413 times the kilowatt-hours input into the motor. This in essence is an explanation of the heat pump principle.

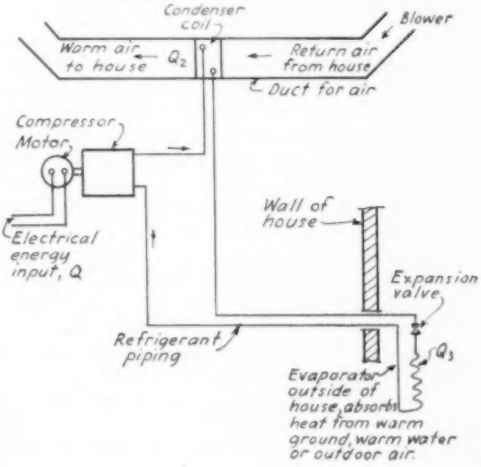
The actual application of the heat pump to domestic heating is not as simple, but the principle is the same. In place of the small condenser, a finned heat-transfer coil is placed in an air duct, as shown in Fig. 7, and a blower is used to circulate air over the outside of the coil. The heating effect, Q_2 is handled in the same manner as in any conventional warm air furnace system, except that the temperature of the coil in the condenser is not as high as that of the surface of a furnace. Furthermore, the warm air leaving the coil and going to the warm air registers is comparatively low in temperature and of the order of 120°F maximum. This necessitates a larger air flow rate through the system, and larger ducts than are commonly employed with a conventional furnace system.

The source of heat, Q_3, is no longer a watermelon. The major problems connected with the application of the heat pump have been in finding a convenient and ample source of Q_3 outside of the house. Numerous attempts and a number of successful applications have been made using such diverse heat sources as: the warm ground, underground running water supply, outdoor air when it is warmer than the refrigerant in the evaporator, nearby lakes, and running surface streams.

The problem of finding an ample heat source, which will not diminish in heat-transfer capacity in extremely cold weather, is not an easy one. For example, when the evaporator heat-transfer coil is placed in an outdoor air stream, the capacity for heat transfer diminishes when the outdoor temperature falls and at a time when the maximum heat demand of the house occurs. For this maximum load the proposal has been made of supplementing the heat pump output with a straight resistance coil. This would mean that the coefficient of performance approaches 1.0 when the demand is the greatest. The only justification for this supplementary heat is that the installation cost is reduced and the number of days in a heating season when maximum demand occurs is only a small proportion of the entire heating season.

The use of warm ground as an external heat source involves similar problems that have been difficult to solve. For example, in order to obtain good heat transfer capacity, an extensive piping arrangement is neces-

Fig. 7. Simplified Diagram of Warm Air Heating Using a Heat Pump.



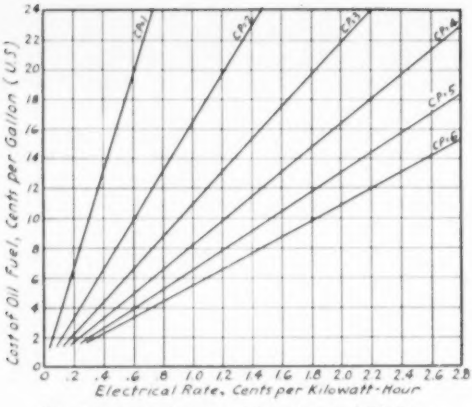


Fig. 8. Comparative Cost of Electricity and Oil Fuel.

sary for the evaporator. The cost of digging a well for a vertical piping system is high. Horizontal pipes buried about 6 ft. below the surface of the ground require tremendous yard area, and several hundred feet of piping. Furthermore, the conductivities of soils differ from one installation to the next so that engineering design cannot be standardized. At the time of writing, therefore, the main limitation in the more widespread use of the heat pump principle has been in the cost and unpredictability of obtaining the heat source Q_1.

Overlooking for the moment the practical limitation of the scheme, the point should not be overlooked that:

$$Q_2 \text{ is the sum of } Q_1 \text{ and } Q_w.$$

and that a coefficient of performance can be obtained that is greater than 1.0. The literature covering heat pump applications is extensive, and the results seem to show wide variations in the values of coefficients of performance (*CP*) that were obtained. It appears that *CP* values as high as 6.0 have been claimed in some favorable installations, and that *CP* values of the order of 3.0 can be obtained without too much difficulty.

Comparison of Electrical Costs with Oil Costs

Figure 8 is a graphical comparison of costs of electrical heating and that using oil as fuel. For this purpose, the overall efficiency of utilization of oil fuel has been considered as 80 per cent, whereas electrical energy has been considered to be transferred to heat energy at the rate of 3413 Btu per kw-hour. The curve marked "CP—1" is applicable to all of the electrical forms of heating, and particularly to those utilizing resistance coils. The curve indicates that oil at 14 cents per U.S. gallon would be equivalent in cost to electricity sold at a rate of 0.42 cents per kilowatt-hour. Few localities in the country have sufficiently low rates that electricity can compete in cost with oil fuel on this basis. For example, consider a locality in which the electrical rate is 2 cents per kw-hr, and oil fuel costs 14 cents per gallon. In order for the electrical costs to be the same as the oil costs, the electrical rate would have to be as low as 0.42 cents per kw-hr. The actual cost of 2.0 cents per kw-hr is almost 4.8 times as great. In other words, the cost of electrical heating on this basis would be 4.8 times as much as that for oil fuel.

The possibilities with the heat pump application become apparent, as comparisons are made with "*CP*" values of 2 or more. For example, oil fuel at 14 cents per gallon would cost the same as electrical heating at 1.28 cents per kw-hr for a coefficient of performance of 3.0. Similarly, if a *CP* value of the order of 5.0 could be obtained, the electrical unit cost could be as high as 2.1 cents per kw-hr and the total electrical bill would be no higher than the total fuel bill for oil fuel.

Comparison of Electrical Costs with Gas Costs

In a similar manner, Fig. 9 shows a graphical comparison of gas fuel and electrical rates. The cost of gas fuel has been expressed in terms of "cents per therm." Since the billing for gas fuel is frequently made in terms of "dollars per 1000 cubic feet" of gas, conversion values are given in Table 1. For example, if in a given locality mixed gas having a calorific value of 800 Btu per cu ft. is sold at a rate of $0.60 per 1000 cu. ft., the unit cost is equal to 7.5 cents per therm.

In Fig. 9, the curve labelled as "CP—1.0" is directly applicable to all forms of resistance heating. If gas is available at 6 cents per therm, the unit cost of electricity would have to be about 0.25 cents per kw-hr for the total seasonal fuel costs to be equal. If the prevailing rate for electricity is 2 cents per kw-hr, then the electrical form of heating would cost about eight times as much as gas heating. Figure 9 indicates that with a heat pump the total costs with the two forms of fuel could be made more comparable only with a fairly high value of CP, of the order of 5.0 or greater.

Summary

A study of the values in Figs. 8 and 9 indicate conclusively that electrical heating is not cheap. In fact with ordinary forms of resistance heating, regardless of whether they be of the resistance coil type or of the panel heating type, electrical heating is one of the most expensive of the currently available fuels in most parts of the United States and Canada. A few isolated areas have special low rates that make it worth consideration. Where such low-rate areas happen to be also areas where the climate is relatively mild, a large number of instal-

Table 1.

CONVERSION TABLE FOR UNIT COSTS OF GAS FUEL

Gas Rate, Cents per Therm (100,000 Btu).

Rate Dollars per M cu. ft.	Calorific Value of Gas Fuel, Btu per cu. ft.											
	500	550	600	800	850	900	950	1000	1050	1100	1150	1200
$0.40	8.0c	7.5	6.7	5.0	4.7	4.4	4.2	4.0c	3.8	3.6	3.5	3.3
0.45	9.0	8.2	7.5	5.6	5.3	5.0	4.7	4.5c	4.3	4.1	3.9	3.8
0.50	10.0	9.1	8.3	6.3	5.9	5.6	5.3	5.0	4.8	4.5	4.3	4.2
0.55	11.0	10.0	9.2	6.9	6.5	6.1	5.8	5.5	5.2	5.0	4.8	4.6
0.60	12.0	10.9	10.0	7.5	7.1	6.7	6.3	6.0	5.7	5.5	5.2	5.0
0.65	13.0	11.8	10.8	8.1	7.6	7.2	6.8	6.5	6.2	5.9	5.7	5.4
0.70	14.0	12.7	11.7	8.7	8.2	7.8	7.4	7.0	6.7	6.4	6.1	5.8
0.75	15.0	13.6	12.5	9.4	8.8	8.3	7.9	7.5	7.1	6.8	6.5	6.2
0.80	16.0	14.6	13.3	10.0	9.4	8.9	8.4	8.0	7.6	7.3	7.0	6.7
0.85	17.0	15.5	14.2	10.6	10.0	9.5	9.0	8.5	8.1	7.7	7.4	7.1
0.90	18.0	16.4	15.0	11.3	10.6	10.0	9.5	9.0	8.6	8.2	7.8	7.5
0.95	19.0	17.3	15.8	11.9	11.2	10.6	10.0	9.5	9.0	8.6	8.3	7.9
1.00	20.0	18.2	16.7	12.5	11.8	11.1	10.5	10.0	9.5	9.1	8.7	8.3

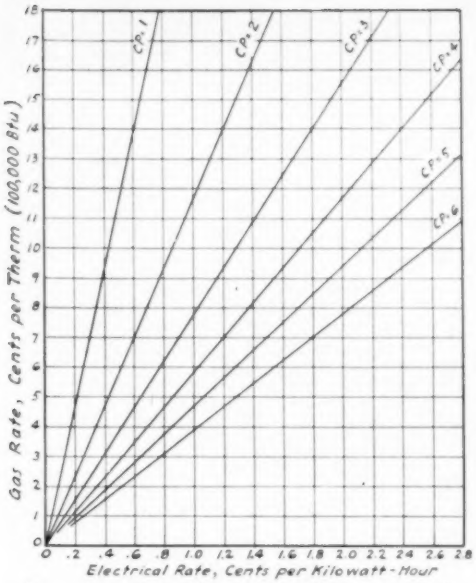


Fig. 9. Comparative Costs of Electricity and Gas Fuel.

lations have been made. In other areas, the only possibility of using electrical energy for space heating is where the heat pump might be feasible. Since the mechanism for the heat pump, including the heat transfer equipment for the evaporator, is not inexpensive, most installations have been made in expensive homes.

One conclusion can be drawn that is applicable to most homes. During the past dozen or more years, fuel costs have never gone down. The saying that "death and taxes are always with us" might be paraphrased to read: "death, taxes, and fuel bills never leave us." The way in which most home owners can combat this tendency for increased fuel costs, and the increased costs with more expensive fuels such as electricity, is to weatherproof the house to a far greater extent than is now common practice.

Certainly, if electrical heating is to be considered in many areas of the country where climatic conditions are severe and where electrical rates are not low, then unusual amounts of weatherproofing might be advisable. In such cases, the use of 2" x 6" studding, with a 6" thickness of sidewall insulation, and ceiling insulation with a 6" layer of insulation might be worth while. Large window areas might have to be avoided, and the use of double-pane or even triple-pane windows might be mandatory. One common figure that is in current use is to provide an amount of weatherproofing that will give not more than 60 Btuh heat loss per sq ft of floor area. This type of structure is a relatively poor barrier to heat loss, and should not be tolerated where electrical resistance heating is contemplated. A more suitable index of suitability would be a value of about 25 Btuh per sq. ft. of floor area, or less. That is, in a small home having a floor area of 1000 sq. ft. of floor area, the design heat loss should be of the order of 25,000 Btuh or less. If more and more of the houses could be made to these exacting requirements, the future progress of electrical heating would be much rosier.

In the first column in table 2 on page 45 of the June issue from Professor Konzo's article on Degree-Day Method of Estimating Fuel Consumption carried the heading "Heating Values, Btu per lb.", this should not have appeared. In table 3 the heading "Heating Values, Btu per lb." should have read "Heating Values, Btu per Cu. ft."

Smoke Filaments Simple Technique for Air Distribution Study

Smoke filaments are a simple but very satisfactory technique for establishing flow patterns and velocity directions in investigations of room-air distribution, The American Society of Heating and Ventilating Engineers was told at its semi-annual meeting in Spring Lake, N.J.

The report was made by the Research Laboratory of the ASHVE in a paper prepared by H. B. Nottage, research associate, and J. G. Slaby and W. P. Gojsza, research engineers.

Smoke filaments are capable of yielding quantitative data in slow, wandering flow where other methods fail. Smoke filaments differ from smoke clouds in that they portray local air movement, while clouds show gross motion.

"Smoke is a time-honored means of making air movement visible, but for quantitative purposes it is advisable to be careful in diagnosing what may be seen with smoke," it was stated in the paper."

Inexpensive simplicity was the practical keynote for the studies, said the authors, adding that ammonium chloride was a satisfactory smoke. "Ammonium chloride was found to be an unobjectionable smoke so long as the particles were kept small and the quantities kept within reason. The particles did have a trace of acid carry-over so that judgment was necessary in its use.

"Direction angles for the most part were estimated by visual judgment with careful and experienced operators," the paper stated. "Initially some data were taken with a protractor carrying a long indicating wire, but after sufficient experience this was discarded as an unnecessary encumbrance.

"Careful attention was given to the matter of reproducibility. Checks were made between tests on different days, repeated tests, and different observers. The results were quite satisfactory. For the range covered, jet-edge positions could be duplicated within plus or minus 0.25 feet, and individual velocity directions could be repeated to plus or minus 15 angular degrees under the worst conditions, and considerably better than this where the flow was smooth.

"Establishing a velocity-direction profile across the jet required the best average curve to summarize the results. These averages were based on sufficient readings, so that the uncertainty at any point on the profile was very much less than the tolerance on an indivdual spot reading. It is believed that the averaged profiles were accurate to between 5 and 10 degrees at any one point."

Another week of testing is about to be started by field research engineer Henry Remsburg. This is a basementless home using a perimeter heating system imbedded in the concrete floor.

Mobile Research Gets Fast Results

National Warm Air Heating and Air Conditioning Association reports the progress of its Mobile Laboratory which is expediting data for the benefit of the entire industry.

Two years ago the National Warm Air Heating and Air Conditioning Association announced that it was inaugurating a new, practical testing tool as a part of its continuous heating research program at the University of Illinois — a "Mobile Field Laboratory." The objective of the Mobile Field Lab was to test new and unique warm air heating systems in the field for the purpose of learning performance characteristics under actual living conditions as well as under the various climatic conditions identified with specific sections of the nation.

The work that has been accomplished has adequately demonstrated the effectiveness of such a research implement. Of prime importance is the fact that as a result of the Mobile Field Lab operation the publication of the latest in improved design and installation standards for warm air heating systems will progress at a faster rate than ever before possible.

To obtain the desired heating information with this traveling laboratory requires a great amount of scheduling detail necessary in getting the Mobile Lab to each testing site. Then, following each test, it is necessary to assemble the test data, and analyze it. All of these activities call for correlation and coordination tactics analogous to military field operation.

Every Monday morning all through the past heating season the Association's Mobile Laboratory has been backed up to the front door of someone's home. The instruments have been unloaded, an armful of thermocouples and 400 pounds of recording equipment set up and another week of intensive testing of the performance of a heating system has gotten under way. Every Friday afternoon the thermocouples were taken down, the instruments placed back into their cases, and all the test apparatus loaded back into the truck to be

moved on to another job, perhaps in another city fifty or a hundred miles away. All travelling was done over week-ends so that no time would be lost in starting a new job each following Monday morning.

A vast amount of preliminary work had to be done before Henry Remsberg, the Association's field investigator, stepped on the starter last Fall. Every test project had to be located well in advance so that routing of the Laboratory could be established. There had to be a minimum amount of travel between jobs and no backtracking in order that the maximum number of heating systems could be tested in a single heating season. A great deal of care was used in selecting the jobs and a carefully formulated plan was followed.

Conferences were held with the Research Advisory Committee of the Association, the Research Staff at the University of Illinois and the Association's Installations Codes Committee in order to determine how the work of the Mobile Laboratory could best be coordinated with each of their programs to eliminate unnecessary research work and supply factual field performance information. The apparent trends in the Industry and the forward thinking of some of the Industry's leaders were analyzed to determine if there appeared to be a demand for certain types of warm air systems or modifications of present practices.

After the types of systems to be surveyed had been determined, each was given a code number — so that a schedule and a record of the field test work could be accurately kept. From this schedule the proposed number of surveys of each type of system was established and balanced against the number of weeks that the Mobile Laboratory could operate during the heating season.

Home Owners Contacted

Then came the big job of locating the homes to be tested. This task always requires the cooperation of a great many individuals and a considerable amount of travelling and "looking around" as there must be a wide variation in the geographical locations of installations being tested as well as a variety of outdoor weather conditions. The various installation practices of contractors and builders must be reported and analyzed for comparing the data obtained.

After the jobs had been located, the occupant of each test house on the proposed schedule had to be contacted. It is necessary to have their permission to back the Laboratory up to their front door, bring in the instruments, make a week's survey that will completely discommode their way of living for a whole week.

Imagine the bulky recording apparatus and hundreds of feet of thermocouple wire strung out through the house being tested. An uninformed observer would doubtless wonder how the owners of these houses would permit such goings on. After all, it is an American tradition that a man's house is his castle and his wife's domain. It is a little incongruous to think that the average housewife would countenance having some outside agency come into her home, set up a lot of space-occupying equipment, string out a lot of wire all over the house, set up thermocouple-carrying standards in the middle of her rooms, and, to top it all, have a strange man spend five solid days in her home making temperature readings and heating layouts and asking questions.

The housewife and the builder show interest in the results being obtained by the testing engineer. Their cooperation has added much to the data recorded for later evaluation.

This is particularly mystifying when one realizes that the family occupying the test house receives absolutely no monetary remuneration for extending this courtesy. Actually, all they receive for enduring this ordeal is the sincere thanks of the industry.

Data Being Analyzed Now

The test work for the past heating season is now over. About twenty surveys have been made throughout the states of Illinois, Indiana, Michigan, Ohio, and Pennsylvania and a vast amount of interesting and factual performance data has been accumulated that will "point the way" for the Industry — point out bad practices and emphasize good ones — and eliminate a lot of preliminary investigation by the Research Staff at the University of Illinois.

Small Pipe Systems Tested

Small pipe forced warm air systems were given the highest "rating of importance" during the past heating season. Nine such jobs were surveyed. Some of them used $1\frac{3}{4}$" round pipes with high temperature air and high air velocities in the ducts. There was another group that used $3\frac{1}{2}$" round pipes in which air temperatures and velocities were considerably higher than those normally used in a conventional forced warm air heating system. Both of these might be classified as "inspirating systems" in that their operation depended upon the mixture of a substantial amount of room air with the heated air delivered to the room by the furnace. Several "non-inspirating" type systems were surveyed that used 4" round pipe and close to normal velocities and temperatures.

Two crawl-space systems, in which the crawl-space was used as a warm air plenum, were tested to secure further information with respect to shrinkage of lumber used in crawl-space construction and to further check on the performance of this type of system.

Compare Carpet vs. Bare Floor Perimeter Results

It is interesting to note that of several perimeter radial installations tested, two were identical homes, one with carpeted floors and the other using bare asphalt tile floors. It has been known for some time that a carpet on the floor of a perimeter heated slab house would affect heat delivery into the rooms. It has appeared that the amount of radiant heating would be reduced and that register air temperatures would be increased. To what extent carpeting has thus affected system performance has not been known up until now. Although some laboratory work has been done on this phase of system performance this is the first time that the Industry has had an opportunity to evaluate the effect of carpets as actually installed on a job. The data secured on these two tests will soon be reported and should give good indication of just what can be expected.

Year 'Round Conditioning Research

The first of many proposed surveys has been made on an all-year air conditioning system in which summer cooling is furnished by a mechanical cooling unit placed in the return air duct system. One was made this past winter to observe the performance of the system during the heating cycle and to determine the effect, if any, of the cooling unit in the return air duct system. This summer the Mobile Laboratory will return to this home to make a series of tests on the performance of its cooling equipment. Occupants of the house have assured the Field Investigation Committee that the system provided very satisfactory operation during last summer despite the fact that the mechanical cooling equipment appears to be slightly undersized according to the calculated heat gain. This is the first of a number of such tests that will be made.

Tips on Forming 17 Chromium Stainless (Type 430)

Many sheet metal shops are forming 17 chromium stainless steel for the first time, according to R. M. Nelson, Armco Steel Corporation, Middletown, Ohio. More would be using this grade if they were familiar with proper fabricating practices.

An important fact to remember is that 17 chromium stainless is not as ductile as the chromium-nickel grades, but it will take most ordinary forming without damage. Consider these points in bending 17 chromium stainless.

1. Radii should be as liberal as possible.

2. There is a tendency to crack more easily when the sheet is severely bent *parallel* to the direction of rolling.

Wherever possible, jobs should be laid out so that severe bends will be at right angles or, at least, an angle of 45 deg to rolling direction. Since this cannot always be done, the best answer is to use a liberal inside radius.

Here are recommendations to help shops in forming 17 chromium stainless steel sheets:

1. 90° *bends on material .050" (18 gage) and lighter.* These should give no trouble. If the radius is sharp, "orange peel" may show at the point of bend. This is not harmful but can be lessened by using an inside *diameter* of at least two metal thicknesses.

2. 90° *bends on material heavier than .050".* The inside *diameter* of the bend should be at least two metal thicknesses.

3. 180° *bends on material lighter than .050".* Usually, but not always, these can be made flat — if the bend is *transverse* to rolling direction. If the bend is parallel to rolling direction, the inside *diameter* of the bend should be at least two metal thicknesses. That means there should be room for two thicknesses of metal in the bend after forming.

4. 180° *bends on material, .050" and heavier. The* inside *diameter* of the bend should be at least two metal thicknesses if the bend is *transverse* and four metal thicknesses if it is parallel to rolling direction.

Heating Basement Rooms

Heating basement rooms may be a serious source of trouble unless the warm air heating dealer analyzes the problem correctly. It is essential that the use to which the basement room is to be put by the homeowner be understood by the dealer before he installs the warm air heating system.

Generally, the basement room will be used for either a recreation room or for living quarters such as bedrooms or a separate apartment. If the room is for recreation or playroom use, then the heating problem is not so difficult as it is if the room is for living accommodation. This is due to the fact that people can play games in the recreation room when the temperature condition is such that it would be unsuitable for ordinary occupancy.

Often it will be found that a basement room which has been quite satisfactorily heated during the winter season will become uncomfortable in the spring of the year. This is because the rate of heat loss for the basement room is different than that of the rest of the house at that season of the year. Frost is still in the ground around the basement walls and the rate of heat loss of the basement room therefore is fairly high, while the warm spring sunshine is reducing the rate of heat loss in the portion of the house where the thermostat is located. This unbalanced condition can cause serious discomfort to the occupants of basement rooms if such rooms are being used for regular living quarters. The rooms will feel damp and chilly owing to the lack of proper continuous warm air delivery.

The most practical solution to the problem of providing comfort for the occupants of basement living quarters is to install a system of zone controls. By controlling the delivery of warm air to the basement living quarters as a separate zone, with its own thermostat, it is possible to maintain comfortable conditions throughout the entire house.

Make sure the use to which the basement room is to be put is known, so that the correct system can be calculated in the initial estimates and design layout.

Black mastics have a tendency to crack and peel, permitting water to seep beneath the patch.

Rough and pebbly condition of the concrete deck when the original tin roof was removed.

Replacing Old Metal Roofing

Lawrence E. Gichner Sheet Metal Contractor

Temperature and moisture conditions must be considered by the sheet metal contractor when laying tin roofing on a built-up concrete deck.

THE ORIGINAL ROOFING contractor for the National Bureau of Standards believed he was putting up a good installation when he laid red rosin paper flat on the concrete deck, then put on his metal and painted it for protection from the weather. He forgot that deterioration doesn't always come from the top side.

With copper in short supply for non-armament use, tin is coming into greater prominence than ever as a roof covering. But tin, like every other roofing material, has its practical applications and its limitations. Tin is a good substitute for copper, but it will definitely not do everything that copper will, nor is it fair to expect it to.

Reasons for disintegration of original roof

The first tin roof on the National Bureau of Standards building was laid over red rosin paper, which is good standard practice, but with time the paper disintegrated and vanished, with the exception of a few small pieces still intact. The paper disintegrated because of the condensation that formed under the metal roof and its chemical reaction with the concrete deck. When examining the metal from the outside, sizeable spots were found that had rusted completely through. When the roof was raised, these spots were found to represent three different conditions:

1. There were cracks and openings right through the concrete permitting a concentration of moisture-saturated air to attack the metal from beneath.
2. The nails that held the cleats had rusted, and this rust had attacked the under surface of the tin.
3. The concrete was rough, loose and scaly, indicating decomposition in the presence of moisture.

Instead of insisting upon a smooth surface before applying his roof covering, the original contractor had rolled his rosin paper over the lumpy areas, possibly believing that the thin sheet of paper would allow for the uneven surface.

The cracks and holes in the concrete deck allowed

Cutting out the rusted material along the caulk line.

One of the few scraps remaining of the original rosin paper.

The finished deck before painting. Note the absence of seams.

moisture-laden air to reach the underside of the metal roofing and at night when the roof became cold, the moisture condensed, saturating the rosin paper; the saturated paper set up a chemical reaction with the lime in the concrete. In time this solution dissolved the paper and deteriorated the top side of the concrete deck into powder and pebbles. The natural expansion and contraction occurring daily with these variations in temperature caused the underside of the tin to be chafed until a hole had worn through to the top side. This first opening allowed rain to leak into the space between the deck and the metal, and the process was multiplied one hundredfold. The increased moisture soon attacked the nails, and they in turn set up their own electrolytic action that further deteriorated the entire under side of the metal roof.

Methods of patching found ineffectual

The first repairs were attempted by applying standard roofing compound over each opening found. Not realizing that the source of trouble lay beneath the roofing, each new opening was repaired by another generous coat of roofing compound. There is no place for the use of this compound on a tin roof because when the sun has drawn out the moisture, it cracks and scales, with the result that rain seeps under the new hardened material, and rust begins in another place. Painting will not stop the rusting because the paint cannot penetrate to the areas under the scale formation.

Paint as a roof preservative

After many years of testing, it has been found that red metallic is the best preservative for tin roofs, and with an occasional coat the roof will last for many years. How often a roof should be painted depends upon the quality of the paint used, how heavily it is applied, and upon the severity of the weather. Good advice to a customer is to have his roof examined every two or three years, not necessarily painted.

The campaign to have home owners paint their metal roofs where they show, in attractive greens, blues and sundry other shades is commendable, and should prove effective as a new note in the sales promotion of metal roofing. Aluminum paint is also most serviceable in many places, but regardless of the desired color scheme, a red metallic base is advisable for preservation.

The seamless metal in long rolls is ideal to use in roof work because there are fewer opportunities for failure and better endurance. When applying a new metal roof, the deck is first prepared by removing as much of the

Electronic Secretary

Experience has shown that many service and maintenance calls in the contracting business come over the telephone at periods when there is no one in the office to take the message. These calls are often important and should not be allowed to go unanswered. The solution to this difficulty has been met in an ingenious manner by one Midwest contractor.

RECEIVING TELEPHONE CALLS after working hours, on Saturday afternoons, Sundays and holidays, has always been a tough problem for the heating sales and service dealer. This problem has been solved by J. S. Martin, owner of the J. S. Martin Company, Racine, Wis., by the use of a wire recorder.

This clever device, consisting of a Webster-Chicago wire recorder, set atop a cabinet which contains a record, a solenoid for operating a telephone relay circuit, and other "gimmicks", has been handling the job even better than Martin expected.

When a telephone call is received, and no one is in the office, the sound of the bell puts the "electronic brain" in the cabinet to work. First, the telephone is lifted off the hook. Simultaneously, an ordinary phonograph turntable and needle gives an "answer". The record states "Hello! This is the J. S. Martin Company. Mr. Martin is out at present. This telephone is being answered by an electronic secretary. Will you please leave your name, telephone number and message. It will be electronically recorded, and Mr. Martin will call you as soon as possible. Now, please begin your message".

Naturally, the novelty of this mechanical voice intrigues most housewives telephoning in, and usually they are able to collect their wits sufficiently during the half minute which follows to record a message with the telephone number and name.

Actual recording is handled by a one-hour spool of stainless steel wire, mounted on the wire recorder resting atop the actuating cabinet. The wire recorder, which can easily handle as many as 500 such messages, operates for from 30 seconds to one minute as required, and then shuts off, with around 30 feet of wire permanently containing the message. When another call comes in, the process is repeated, and so forth until the office is opened. Martin rewinds the spool, places it on "listen" and one by one, the messages which have come in are played back. It is a simple matter for the dealer to shut the recorder off at the end of each message to telephone the customer, transact whatever business is required, and after hanging up, play the next message until all have been handled. Frequently there are as many as 25 such calls which have come in through a 24-hour period. There are dozens of instances on record, in which valuable sales or contracts have resulted from this type of message. Many of these sales might have gone to some other dealer, had it not been for the fact that the recorded voice "pacified" the caller into waiting until he received a return call.

There is no such thing as a "service blank" in the experience of the Martin organization, which in the past consisted of instances when a customer called in for service, and upon finding no answer whatsoever, immediately transferred her loyalty elsewhere. "It's a tight link between the firm and its customer," Martin said. "It has definitely paid for itself many times over."

Replacing Old Metal Roofing

(Continued from page 50)

loose and rough material as possible; next two heavy 15 lb felt paper bases are laid as a protective cushion.

The roof condition on the National Bureau of Standards building offered quite a cleaning problem, due to the deterioration of the concrete deck. Bushels of powder and pebbles were collected, and more appeared as soon as the surface became thoroughly dry. The holes and cracks in the deck were sealed with 15 lb felt paper.

The new roof will be there for a much longer time than the original one.

Anthracite Industry to Study Smoke Abatement

TWO HUNDRED DELEGATES attending the recent tenth annual Anthracite Conference at Bethlehem, Pa., were told that some communities have a smoke problem, and because of their size, cannot afford either full or part-time smoke abatement enforcement officials. In such cases, voluntary cooperation on a community-wide basis is the only way to clean it up.

Citizens today are entitled to air as pure as the water they drink. The anthracite industry is prepared to offer engineering service in the solution of smoke problems, to supply educational materials, and to train appointed smoke abatement officials.

Residential Air Conditioning Methods Explained at Meeting

Application to Forced Warm Air Jobs Given Special Attention

THE AMERICAN SOCIETY OF REFRIGERATING ENGINEERS at its 39th Spring meeting in Atlanta, presented the latest information on current applications of equipment for year 'round air conditioning in a conference attended by over 200 members and guests. Equipment for residential air conditioning was described in a group of five papers:

Review of Present and Future Markets for All Year 'Round Air Conditioning—E. A. Freund, Union Electric Co. of Missouri.

Application of the All-Gas Year 'Round Residential Air Conditioner—H. C. Pierce, Servel, Inc.

Application of the All-Electric Year 'Round Residential Air Conditioner—G. K. Marshall, General Electric Co.

Application of the Combination-Gas-and-Electric Year 'Round Residential Air Conditioner—S. F. Shawhan, Carrier Corp.

Application of Packaged Air Conditioners to Existing Forced Warm Air Residential Heating Systems—S. W. Reid, York Corp.

Air Conditioning Dependent Upon Electrical Power for Air Movement

The paper presented by E. A. Freund pointed out that all air conditioning equipment is dependent upon electrical power for its source of air movement and basic control. Thus the utility companies have investigated the possible demands for power consumption and have made plans to provide sufficient current to meet these demands adequately. The utilities have made a pre-arranged survey of the home building trend for the next ten years and the survey indicates there will be between 800,000 and 1,000,000 new buildings erected annually through 1954, and beginning in 1955 an increase will be noted. They feel there are unlimited opportunities to sell year around air conditioning in a large number of these new homes but recognize the fact that the public must be shown how these buildings will be properly heated and cooled for year 'round comfort. The utilities are willing to cooperate in every way to help promote the sale of air conditioning to home owners.

Air Conditioning Dependent Upon Existing Installations

H. C. Pierce presented data concerning the all-gas year 'round residential air conditioner wherein he pointed out that the real market for air conditioning will be found to exist on the reputation that is built upon the current installations being made. Therefore, every installation made today should be carefully erected and every complaint given prompt attention. Pierce pointed out that the different air quantities required for summer and winter were not too great a problem in today's domestic system; proper engineering and continuous air circulation as practiced in the warm air heating field should answer the needs of this problem.

Individual control circuits for summer and winter operation are the logical answer for satisfactory performance of the equipment. Two switches are recommended — one that acts as a master switch and will turn off the entire system but when turned on controls only the fan for ventilation. The second switch should have three positions, one for an off position, one for heating and one for cooling. Thus the owner may select either ventilation, cooling or heating.

The All-Electric Domestic Air Conditioner

The application of the all-electric year 'round residential air conditioner was explained by G. K. Marshall. The all-electric system is the heat pump applied to the conventional warm air system where the coil used for cooling the air in the summer time is used in the winter to supply heat that will warm the air being circulated to the rooms. The change in operation from heating to cooling is automatic and under normal conditions the heat pump will adequately heat the modern home when the outside temperature is 20 degrees. When the temperature drops below 20 degrees an auxiliary source of heat must be supplied. In this system there is an automatic thermostat that turns on a supplemental electrical heating unit that will supply the heat at the rates required as the temperature drops. No chimney is needed with this type of system as there are no products of combustion to be vented.

The heat pump was designed to make the all-electric home truly all electric in every respect. The heat pump obtains its source of heat from three general sources:

1. Water — either city supply or deep well.
2. Earth — coils buried below the frost line in the ground.
3. Air — outside air being passed over heat extracting coils.

To calculate the residential heat load, Marshall suggests that only the sensible heat be considered as the latent head load in residences is minor.

Combination Gas-Electric Units

Combination gas and electric year around conditioners were discussed by S. E. Shawhan, who stated that the

best features could be utilized in a unit incorporating a conventional electrical refrigerating system and a gas-fired furnace. To obtain the best results from an installation the job should be properly designed. Calculate the heat load in the manner as recommended by the A. S. H. V. E. Guide, distribute the correct quantity of air to the proper areas, use zone control and two separate units in large houses, one unit in a small house. Shawhan recommends that air distribution systems be kept simple but that all duct joints be tightly sealed. This prevents excessive air loss and eliminates overheating or over-cooling of certain areas. He suggests that equipment be located in closets, utility rooms and basements but always the deciding factor should be the best location for the air distribution system.

In field tests, it has been revealed that baseboard outlets were good for heating but did not prove too satisfactory for cooling because of cold air stratification at the floor and if baseboard distribution systems are to be used some special apparatus will be needed to give an upward motion to the incoming cool air. The perimeter heating systems have proven effective and desirable, and two or more outlets are fast becoming standard practice. They also give far better air distribution than a single outlet. All grilles used in residential work should have at least 60 per cent free area.

Return systems must have unobstructed entrance for the air but in small homes centrally located openings have proved satisfactory. Returns from second floors are not too effective due to the resistance to the return duct. It is common practice to locate the return air intake from the second floor in the vertical space below the bottom step of a stairway. If rooms on the second floor are below the entrance to the stairway (rooms located over garages), then a return duct must be taken from those rooms to the conditioner; this is also true for rooms where the doors are normally kept closed.

Supply grille velocities should be kept below 500 fpm, return grilles should not exceed 400 fpm and duct velocities should be maintained below 800 fpm. Whenever noise is objectionable it is recommended that sound traps be installed.

Long operating periods and short off periods are recommended for the heating cycle to provide an even flow of heat to living areas. Further tests reveal that insulation in the walls of an air conditioned building is a "must" and no equipment manufactured can adequately perform the job for which it is designed with the variable loads common in uninsulated buildings.

Most residential air conditioning systems are using cooling towers for the conservation of condenser water and are the most economical to operate. Favorite locations for cooling towers are behind garages and small groups of shrubbery where they blend easily with a general landscaping plan.

Packaged Air Conditioners Applied to Existing Warm Air Systems

S. W. Reid presented his paper on the application of packaged air conditioners to existing forced warm air residential heating systems. He pointed out that five major items enter into the selection of cooling equipment to be used with existing heating systems, namely:

1. Estimating the load.
2. Selecting the cooling coil.
3. Location of the condensing unit.
4. Distribution of the air system.
5. Selecting the controls and circuits to be used.

When estimating the cooling load it is well known that solar radiation is the greatest source of heat gain for any room. Therefore, on a new building each room must be estimated accurately but where an existing warm air system is to be used, the ducts are already sized and it is unnecessary to make a room by room estimate of the cooling load. Reid warned against overestimating, as the cost of overestimating a cooling Btu is ten times over that of overestimating a heating Btu. In fact, he said it is common practice to select equipment 20 per cent below the estimated capacity because it is rare that the maximum load ever exists and with the use of smaller equipment it is easier to keep the humidity under control.

When determining air quantity, the factor 8.6 cfm per thousand Btu input for heating and 400 cfm per ton for the cooling requirement is good practice. The procedure is to enlarge the fan motor to handle a larger quantity of air and to adjust the motor pulley for the summer cfm requirement.

When installing the cooling unit in the existing duct system, it is advisable, if at all practical, to place it so that the return air will pass through the cooling unit before it reaches the heating plant and to provide a winter bypass damper to cut the return air out of the cooling unit when the heating cycle is on. This will reduce rust and assist in keeping the cooling coils clean.

The addition of a cooling unit to an existing heating plant frequently requires insulating of the supply ducts as it has been found that cool air passing through the ducts will sometimes cause sweating on the mains. It is seldom necessary to be concerned over the risers, as these are usually above the dew point temperature of the air when it enters them.

Every heating system should use the continuous air circulation (CAC) system and between 80 to 100 degree rise through the furnace. The summer changeover should have the required cfm and if low wall grilles are used, furniture should be so placed that the air stream will be deflected upward; this causes better mixing of room air with the cool supply air and reduces stratification at the floor level.

The existing electrical system should be revised to provide:

1. Ventilation
2. Heating or cooling
3. Thermostat control

Humidity controls are not essential and need not be considered for residential applications, according to Reid's findings.

Performance of Pressure Atomizing Nozzles in Domestic Oil Burners

Eugene O. Olson, Chief Engineer, Delavan Manufacturing Co.

Laboratory experimentation and field experience have proved that some of the basic knowledge regarding oil burner nozzle performance is required by oil burner designers, engineers and service men, especially when working with low fuel inputs.

THERE IS A definite trend in domestic heating toward smaller units and lower fuel input. This is accounted for by better home insulation and more efficient heating units as well as by smaller size homes. Lower fuel input requires lower nozzle capacities. This imposes problems not only to the nozzle manufacturers but also to burner manufacturers and servicemen which have made every one connected with the business more nozzle-conscious. In order to help the burner manufacturer, jobber, dealer, and serviceman, pressure atomizing nozzles will be discussed under the following general headings:

1. The nozzle's relation to the combustion process
2. How nozzles work
3. Physical properties of fuel oil and how they affect nozzle performance
4. Nozzle spray patterns
5. Nozzle temperatures and their effect on nozzle performance.

Nozzle's Relation to Combustion Process

Oil, like all other combustible products, burns as a gas. It is obvious, therefore, that an oil burner must prepare the liquid fuel for combustion in that form. In a pot-type burner this conversion of the liquid fuel into a gas is accomplished by the application of heat in the presence of air. This same process is employed in a pressure atomizing burner, but the process is accelerated by the use of an atomizing nozzle. The atomizing nozzle simply breaks the liquid fuel into minute droplets, each one of which can be heated very rapidly and converted into gas.

The ignition process is the first to be considered. The burner delivers oil into the combustion chamber in the form of tiny droplets. Each droplet is surrounded by air also supplied by the oil burner. Heat is applied in a small area of this mixture of oil and air by an electric arc. The high temperature arc converts the oil and air into a gas and raises the temperature of that gas above the ignition point, thus establishing combustion in a small area. The high temperature generated in this combustion area raises the temperature of adjacent "layers" of oil droplets and air above the ignition temperature and thus ignition spreads to the entire spray.

The next factor to be considered is the ignition process after a flame has been established and the electric arc discontinued. A stream of small droplets of oil surrounded by air is moving away from the oil burner into the combustion chamber. Ignition is now accomplished by the heat of the flame raising the temperature of the oil droplets and air as they advance into the combustion zone. The ignition process is still the same, first converting the oil and air into a combustible gas and then heating that gas and air above the ignition temperature. In other words, the flame is traveling up the stream of oil and air which is being projected by the burner.

In order to establish clean, stable combustion, it is essential that the velocity of the flame travel toward the burner be the same as the velocity of the oil particles and air traveling away from the burner. The point at which those two velocities are equal is the "flame front". This is the point of flame retention or ignition zone. Its position and shape are different for different burner designs. The stability of the flame front depends upon a number of factors.

Variations in the air velocity will change the flame front. It will be evident that an increase in the air velocity will temporarily at least move the flame front back away from the burner because for the moment the velocity of the air and oil mixture has exceeded the velocity of the flame moving upstream. Unsteady air delivery can make an unsteady flame front and contribute to burner noise and pulsation.

If the droplet size in the oil spray is too large, more time will be required to convert the oil into a gas and to complete the combustion process. For that reason the rate of ignition will be slower and the flame front will

Paper presented at the Engineering Session, 20th Anniversary Convention, Oil Heat Institute of America, Philadelphia, Pa.

recede from the burner. It will be seen later in this discussion that the droplet size in a spray from a nozzle can be affected by various factors such as properties of the fuel and pressure. As far as combustion is concerned, the result of large particle size is unsteady flame fronts and some tendency to pulsate. The result of extremely small particle size is a flame front close to the burner. The flash point and boiling range of the fuel also help determine the position and stability of the flame front, especially with low capacity nozzles.

The combustion process which is initiated by the burner alone is aided by combustion chamber design. A properly shaped combustion chamber of appropriate dimensions will help to maintain high ambient temperatures in the combustion zone and therefore promote smooth efficient combustion even though some of the other factors involved are not ideal. Improper selection of the nozzle as to spray angle and spray pattern, inefficient burner design, and improper burner adjustment can all be offset to some degree by good combustion chamber design.

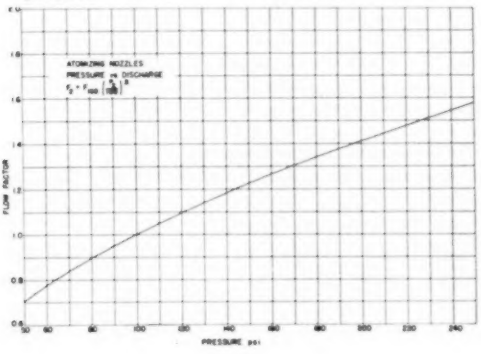
How nozzles work

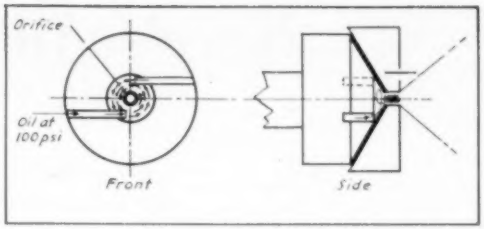
A nozzle in a high pressure gun-type burner performs two functions. First of all it is a metering device and must deliver the correct amount of fuel to the combustion chamber. Its second function is that of "atomizing" the oil so that maximum surface of the oil is exposed to air and high temperature for efficient and rapid combustion.

Metering is accomplished by correct dimensions and calibration of the nozzle by the nozzle manufacturer.

It must be remembered that energy is required to do the work of pulling the oil apart into small droplets and delivering them in the desired spray pattern. This energy is supplied to the nozzle in the form of pressure energy, the common setting on most oil burners being 100 pounds per square inch (psi). This pressure energy must be converted into velocity energy in order to do the job of atomizing oil. The accompanying diagram shows one method of accomplishing this energy conversion. The oil flows through narrow slots and emerges at the far end of the slot at very high velocity. By setting the slots off center as shown and enclosing the space

Graph showing rating for one-gallon nozzle for various pressures.





Front end and side view of a typical swirl type nozzle.

at the discharge end of the slots, it is possible to create very high rotational velocity in this "swirl chamber". The rotation in the swirl chamber sets up a centrifugal force pushing against its outer wall and against the wall of the orifice or discharge tube from the center of the swirl chamber. This rotating mass of oil traveling through the orifice is thrown against the orifice wall with such force that it takes the form of a tube of oil as it travels through the orifice.

Tracing the oil path through the nozzle

Let us follow a "particle" of oil in this rapidly rotating mass as it emerges from the orifice. As soon as it is released from the confining orifice wall it is thrown away from the center tangent to the side of the orifice from which it is thrown. If centrifugal force were the only force acting upon this particle of oil, the spray angle would be approximately 180°. However, all of the pressure applied to the nozzle is not converted into velocity energy and the pressure at the center of the swirl chamber in a normal nozzle in the range of 1.00 gph is approximately 50 to 60 psi. This pressure pushes the oil forward with sufficient velocity that the resultant spray angle is not 180° but somewhat less than that, according to the design of the nozzle.

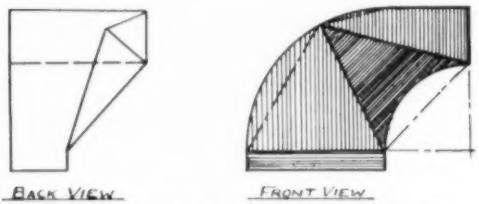
As the oil emerges from the orifice, it takes the form of a film or sheet of oil in the shape of a cone. The sheet or film is traveling away from the orifice and expanding as it goes. It is, therefore, stretched into a thinner and thinner film which finally ruptures, forming small droplets of oil of irregular shapes and sizes. At very low pressures, the film of oil emerging from the nozzle is very unstable and large particles of oil are thrown off from it. As pressure is increased on the nozzle, the spray becomes more stable, and at high pressures the film of liquid becomes very thin, resulting in very small droplets in the spray. Thus, there are two factors that must be considered when determining the pressure at which a nozzle is to operate. The minimum pressure (usually 85 lb) and a maximum pressure (usually 125 lb) based upon safety and atomization efficiency.

Further explanations on the physical properties of fuel oil and how they affect nozzle performance, a discussion of nozzle spray patterns, and nozzle temperatures and their effect on nozzle performance, will be presented in an early issue.

Here's An Easier Way

Hugh B. Reid explains a simplified method for developing the pattern for a rectangular 90 degree transition elbow.

THERE ARE TWO methods used in the solution of this type of problem: The one as presented in this article, and the other, commonly known in the sheet metal trade as the Three Point Method, a sketch of which is shown below.



The Three-Point Method of developing the pattern for a rectangular 90° transition elbow.

The Three Point Method has gained preference with the trade in recent years, it being considered the one which obtains the desired result in the minimum amount of time.

The Simplified Method

The pattern problem presents a method in which lines *A, B, C, D,* on the front view have an identical rise as shown by letter *R* and lines *U1, V2, W3 X4, Y5,* are true length lines. This can be checked by comparing the half width lines on the Throat Pattern with the corresponding half width lines on the Back Pattern. This simplified method reduces the time required for layout comparable to that of the Three Point Method and produces a more efficient elbow. The Three Point Method necessitates three planes and two brakes on the side of the elbow. If the brake angle exceeds 7½ deg and the installation is a mechanical forced air system, a dead air space will occur as the air travels around the elbow. This loss must be considered when making calculations for fan output, motor hp. and pulley sizes required for a smooth flowing, quiet operating system.

The elbow pattern problem presents a gradual constant increase in area as the elbow makes the 90 deg turn. This will eliminate excessive air turbulence and unnecessary dead air pockets, factors that should be considered when the system necessitates smooth, quiet operation such as is desirable in home, office or church installations, for example.

Following is a step by step solution of the Pattern Problem.

To Construct the Front View Drawing:

(1) Draw the 2¾ in. horizontal line *U1*. Extend this line 1 in. and establish the point *T*.

(2) With point *T* as center and radius 1 in., draw a 90 deg arc, dividing this arc into four equal spaces and number the points *1, 2, 3, 4, 5*.

(3) Draw a vertical line through points *T, 5*. From point *5* measure 1 in. and mark this point *Z*.

(4) Measure line *T, Z*. Working from point *U* transfer this distance to line *U, T*, establishing the point *RAD*.

(5) From point *RAD* as center and radius 2 in. draw a 90 deg arc, divide this arc into four equal spaces and mark the points *U, V, W, X, Y*. Draw a line from *Y* to *Z*.

(6) Draw work lines from *1* to *Y*, *2* to *W*, *3* to *X*, *4* to *Y*, and true length lines *U1, V2, W3, X4, Y5*.

Note that the end view is not required to develop the pattern.

To Develop the Back Pattern:

(1) Draw the horizontal line marked center line. Establish the point *Z'*. From the front view transfer length 1¾ in. to the horizontal center line on the layout and mark the point *Y'*.

(2) Calculate the length of the 90 deg arc by multiplying the given radius by the constant 1.57. Thus, 1.57 x 2 = 3.14 or 3⅛ in. Transfer this length to the horizontal center line on the layout and mark the point *U'*.

(3) Divide length *Y' U'* into four equal spaces and mark the points *Y', X', W', V', U'*. Through the points draw lines perpendicular to the center line.

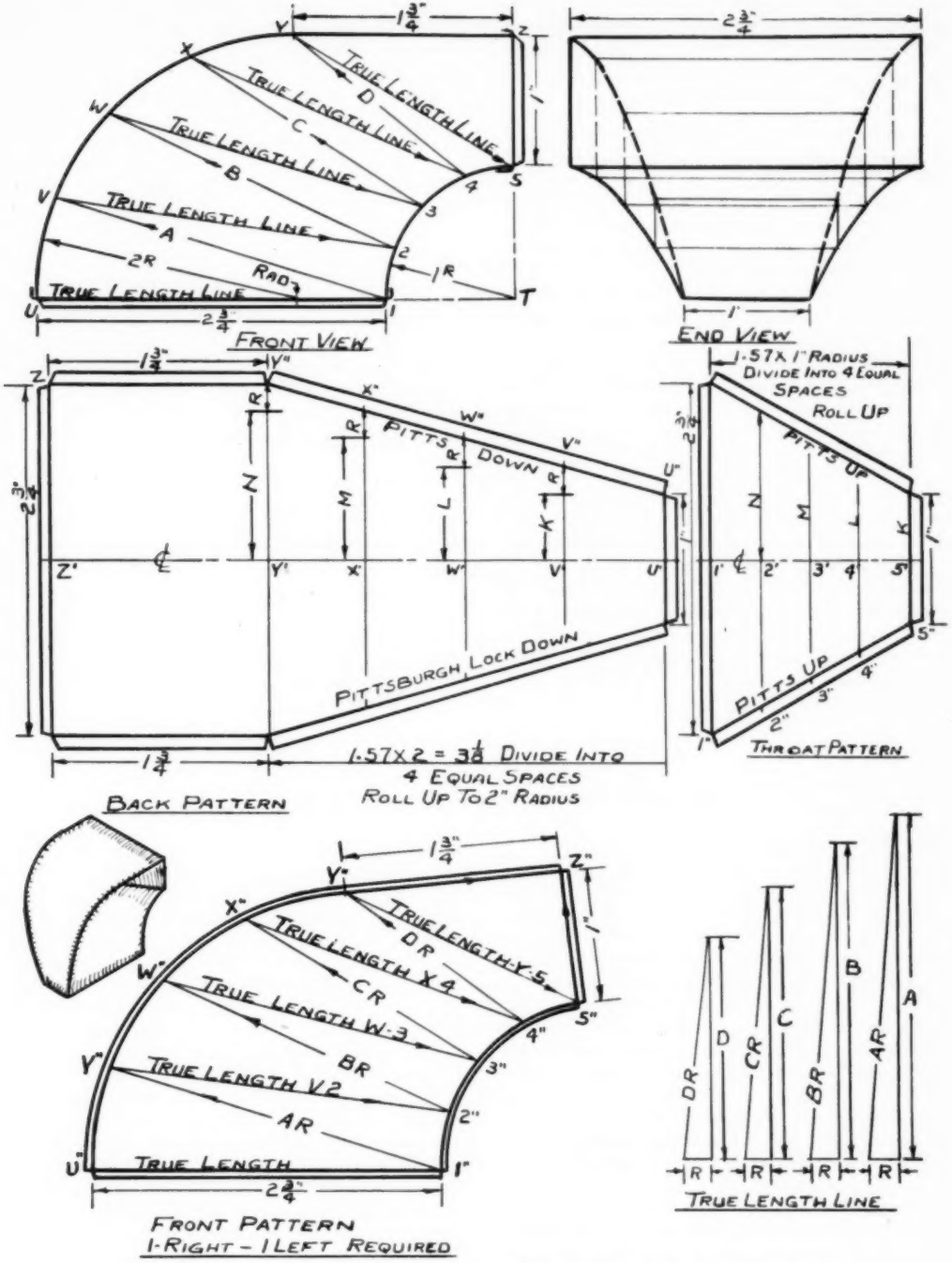
(4) Working from point *U'* measure ½ in. on each side of the center line. Working from points *Y'* and *Z'* measure 1⅞ in. on each side of the center line. Draw lines connecting the points.

To Layout the Throat Pattern:

(1) Draw the horizontal center line, the length of which is calculated by multiplying the given radius by 1.57. Thus, 1 x 1.57 = 1⅝ in.

(2) Divide the center line into four equal spaces and mark the points *1', 2', 3', 4', 5'*. Through the points draw lines perpendicular to center line.

(3) Working from point *5'* measure ½ in. on each



Scale drawings and complete details of the simplified method of developing the pattern for a rectangular 90° transition elbow.

side of center line. Working from point *1'* measure $1\frac{7}{8}$ in. on each side of center line. Draw lines connecting the points.

To Layout the Front Pattern:

Note that the widths at *U'*, *V'*, *W'*, *X'*, *Y'*, on the back pattern are identical to the corresponding widths *1'*, *2'*, *3'*, *4'*, *5'*, on the throat pattern. Subsequently *U1*, *V2*, *W3*, *X4*, *Y5*, are true length lines and the rise between *1* and *V*, *2* and *W*, *3* and *X*, *4* and *Y*, are identical. This simplifies the layout problem considerably as distance marked *R* on the back pattern is the horizontal length for all the developed lines.

(1) Draw the horizontal line *U" 1"* which is $2\frac{3}{4}$ in.

(2) Draw a right angle. Transfer length *A* from the front view to the vertical leg and distance *R* to the horizontal leg. The hypotenuse *AR* is the true length line. With *1"* on the layout as center and radius *AR* draw an arc. Measure distance *U"V"* on the back pattern and from *U"* on the layout draw an arc to cut the arc *AR* and mark the point *V"*.

(3) With length *V2* on the front view as radius and point *V"* on the front pattern as center draw a long arc. With length *1"-2"* on the throat pattern as radius and *1"* on the layout as center cut the arc and mark point *2"*.

(4) Draw a right angle. Transfer length *B* to the vertical leg and distance *R* to the horizontal leg. The hypotenuse *BR* is a true length line. With *2"* on the layout as center and radius *BR* draw an arc. Measure distance *V" W"* on the back pattern and with *V"* on the layout as center cut the arc. Mark the point *W"*.

(5) With length *W3* on the front view as radius and point *W"* on the layout as center draw a long arc. With length *2"-3"* on the throat pattern as radius and *2"* on the layout as center cut the arc and mark the point *3"*.

(6) Draw a right angle. Transfer length *C* from the front view to the vertical leg and distance *R* to the horizontal leg. The hypotenuse *CR* is the true length line. With *3"* on the layout as center and radius *CR* draw an arc. Measure distance *W" X"* on the back pattern. With *W"* on the layout as center cut the arc and mark the point *X"*.

(7) With length *X4* on the front view as radius and point *X"* on the layout as center draw an arc. With length *3"-4"* on the throat pattern as radius and point *3"* on the layout as center cut the arc and mark the point *4"*.

(8) Draw a right angle. Transfer length *D* from the front view to the vertical leg and distance *R* to the horizontal leg. The hypotenuse *DR* is the true length line. With *4"* on the layout as center and radius *DR* draw an arc. Measure distance *X" Y"* on the back pattern. With *X"* on the layout as center cut the arc and mark the point *Y"*.

(9) With length *Y5* on the front view as radius and point *Y"* on the layout as center draw an arc. With length *4" 5"* on the throat pattern as radius and point *4"* on the layout as center cut the arc and mark the point *5"*.

(10) With length *RZ* on the front view as radius and point *5"* on the layout as center draw an arc. With length *YZ* on the front view as radius and *Y"* on the layout as center cut the arc and mark the point *Z"*.

(11) Through the developed points draw the pattern outline.

ASME Discusses Domestic Gas and Oil Burning Equipment

The American Society of Mechanical Engineers at its semi-annual meeting in Cincinnati heard A. L. Carroll, Consolidated Edison Company of New York, report the results of recent field tests conducted in Westchester County, N. Y., where 51 residences utilizing domestic fuel oil and 56 residences using manufactured gas for space heating for an entire heating season were tested.

The tests were based on manufactured gas of 537 British thermal units per cubic foot. Carroll used the calculated hourly heat loss of the house as a common denominator for comparing oil and gas usage in different houses. He said this factor takes into account the many variables such as the size of rooms, use of storm windows, weather stripping, insulation, amount of glass and all the other factors which have a direct bearing on the heating requirements.

"The heat loss, expressed in Btu's per hour, is a well established and widely recognized concept in the heating industry and standard methods have been developed for its determination. It is evident that a well constructed and completely insulated seven-room house may represent a smaller heating load than a poorly constructed five-room house without insulation, storm windows or other heat saving features," he said.

In a normal heating season, Carroll stated, the fuel requirement per 1,000 Btu heat loss was found to be 4,123 cubic feet of 537 Btu manufactured gas, or 22.14 therms (equivalent to 2,100 cubic feet of 1,055 Btu natural gas). For oil, the requirement was 22.5 gallons or 31.5 therms. A therm is equivalent to 100,000 Btu's. There was a fair distribution of the three main types of heating systems, warm air, hot water and steam, in the oil-heated and gas-heated houses.

"We have asked ourselves how the marked difference in the efficiencies of these two types of heating equipment could be explained," Carroll said. "We have also received a number of inquiries from members of the American Society of Mechanical Engineers and members of the American Society of Heating and Ventilating Engineers on the same score.

"You may be sure we have speculated as to what might be the contributing factors which cause this wide difference. Frankly I do not know the answer but am hoping that this paper may stimulate discussion."

Is Fine Print in Sales Contracts Binding?

Albert W. Gray

The legal aspects of the often abused practice of using print so small as to be illegible in sales contracts has led to a number of test cases. Breach of contract suits resulting from such causes are often ruled as valid. Readers are advised to avoid this practice in the framing of binding agreements.

A BUILDER of heating and ventilating systems submitted detailed specifications for the installation of an air conditioning system in a letter to a motion picture film manufacturer.

At the bottom of the first page of this letter was printed in fine type, "All agreements are contingent upon strikes, fire, accidents or delays beyond our control. All prices are subject to change without notice and all contracts are taken subject to the approval of the executive office at Hyde Park, Mass."

The letter was returned by the film manufacturer with the endorsement, "accepted," and signed in the name of the manufacturer by its treasurer. Two days later work was begun under this contract and four days later the contractor received a letter from the manufacturer, "The contract for fans, that was signed by me, was to be submitted to the board of directors for their approval. Please hold off with the same until I send it on to St. Louis to our president and board of directors. I have no doubt that they will accept the same but if not I shall have to cancel the contract."

Five weeks later a second letter was received, "We notify you herewith that we will have to cancel the contract for the fans."

Breach of Contract Claimed by Contractor

In the suit brought by the contractor for this breach of the contract, the film manufacturer contended that by the fine print at the bottom of the page of its letter, the proposal of the contractor was subject to the approval of the executive office of the contractor and since no such approval had been given, there was no binding contract.

In its decision holding this a valid contract and unaffected by the fine print at the bottom of the letter page which was no part of the contract, the New York court said.

"When an offer, proposal or contract is expressed in clear and explicit terms, matter printed in small type at the top or bottom of the office stationery of the writer, where it is not easily seen, which is not in the body of the instrument or referred to therein, is not necessarily to be considered as a part of such offer, proposal or contract."

This decision which has since become an authority in this phase of the law, was based on an Illinois case in which damages had been claimed for a failure to deliver sheet iron in which the defense was the time honored phrase, "All sales subject to strikes and accidents."

"The mere fact that they wrote their acceptance on a blank form for letters at the top of which were the printed words, 'All sales subject to strikes and accidents,' no more made these words a part of the contract than they made the words 'Summers Bros. Co., manufacturers of Box-Annealing Common and Refined Sheet Iron,' a part of the contract."

Fine Print Not in Contract Held Invalid

On an order to a state of Washington lumber company, written on the customer's stationery as well as on the stationery of the lumber company was, "Quotations subject to change without notice. Contracts made at home office only and contingent upon exigencies of transportation and accidents beyond our control."

The dealer failed to deliver the lumber and suit was brought for damages. In its defense the lumber dealer insisted that this fine print clause on the stationery excused the failure to deliver the goods as agreed.

"The offer was absolute," said the court. "The written acceptance was just as absolute. The printed words were not in the body of the letter or referred to therein. The fact that they were printed at the head of their letter heads would not have the effect of preventing the dealer entering into an unconditional contract for sale."

In the trial of a lawsuit brought a few years ago in Illinois against a bus company for injuries suffered by a passenger, a judgment was recovered by the bus company. On appeal the company protested that it had not issued the ticket nor made the transportation contract with this passenger.

On the ticket in large plain type was printed, "Issued by," followed by what appeared to be a black line and below that line, "Pickwick Greyhound Lines." However this apparently black line was "Motor Transit Management Company" in unreadably small type.

Minute Print Regarded as Fraudulent

Of this fraudulent concealment on this ticket the Illinois appellate court said, "The smallest regular size of printing type is 'brilliant.' This size can be read by one having excellent vision. The letters in the words 'Motor Transit Management Company' appear to be about one-third the size of brilliant type. The words in question are printed in such exceedingly small type and are so artfully placed that they appear to the eye without the aid of a magnifying glass as a mere black line. A passenger when he purchases a ticket is not bound by words upon it that cannot be read without the aid of a powerful magnifying glass."

In one of his well known plays, George Bernard Shaw wrote, "Give me deeper darkness. Money is not made in the light."

Statutes have been enacted in many of the states requiring that type be large enough to be readily legible. In Virginia this law states, in part:

"No contract in writing for the sale of any goods or chattels, machinery or mechanical devices, shall be binding on the purchaser, where the form is furnished by the firm, person, company or corporation, unless all the provisions of such contract are clearly and plainly printed or written and where printed, such provisions and covenants and all stipulations as to the rights of the vendor shall be in type of not less than the size known as ten point and wherever in any such contract printed upon a form furnished by the vendor it is stipulated that the vendor is not bound by any verbal agreement or modification of tne terms of such printed contract, then such stipulation shall be printed as a separate paragraph or paragraphs and in type not smaller than pica."

A New York statute is in substance that any conditional contract for the sale of goods for fifteen hundred dollars or less for any other than commercial use, shall be in eight point type.

Supreme Court Decision Regarding Illegible Print

A famous decision by the United States Supreme Court many years ago involved a fire insurance policy in which four lines in minion type so leaded as to be sufficiently legible, stated that the company agreed to make good to the assured his loss in accordance with the terms of the policy. Following this in smaller type neither leaded nor spaced between the lines, were eight paragraphs of solid printed matter restricting the liability of the company and in some instances making the policy entirely void under certain conditions.

The assured in this instance sued to recover on the policy for a loss that had been suffered and the company contended that by virtue of these fine print provisions it was released from any liability. The lower court awarded judgment against the insurance company holding that provisions of this character thus shrouded in darkness were void.

Affirming this judgment against the insurance company and asserting that fine print provisions of this character were not binding on any one except the party preparing the instrument, the Supreme Court made a comment on this misuse of fine print clauses that has been the spirit of the decisions relating to this selling method for eighty years.

"If insurance companies do not mean to take risks on property where gun powder, saltpeter and the like substances are kept even for ordinary use, then good faith to the assured requires that they should declare their intention in terms which cannot admit of controversy; and in order to avoid just cause for complaint it would be better for them to employ type in relation to this important subject, large enough to arrest the attention of the interested party."

Key Clauses Containing Vital Exceptions in Invoices

On the invoice of a Louisville, Kentucky, manufacturer was printed in very small type, "Our guarantee of quality does not extend beyond taking goods back at invoice price if claim is made within 90 days from date of shipment."

The attention of the customer was not directed to this clause nor was the reservation mentioned in the correspondence preceding the giving of the order. When the goods, found unsatisfactory by the buyer, were returned the manufacturer claimed that since the goods had not been returned within the time stipulated in this clause of concealing type, they could not be accepted.

"The rule is," said the court in the action brought by the purchaser, "that for such a clause to be applicable in any case it must be shown that it was brought to the attention of the purchaser."

Before the Court of Appeals of Kentucky last year was an action involving a sales contract with the provision. "There are no understandings, agreements, representations or warranties, express or implied, not specified herein respecting this order. The warranties, provisions, terms and conditions on the reverse side hereof are expressly made a part of this agreement." On the back of the order was the provision that the seller's liability for defects was limited to making good any of the defective parts.

"Though this disclaimer of warranty is clear in its terms," said the court, "we cannot overlook the fact that it is to be found in a long and formidable document prepared by the seller and that it was doubtless un-

noticed or its importance uncomprehended by the buyer. Anyone brought up to believe that for every wrong there is a remedy, will pause before saying that the dealer will escape all liability by merely putting in an order blank a statement to the effect that there is no assurance that the buyer will get the machine that will work. We have paused for the moment and have readily concluded that the evidence of liability under such a circumstance is not permitted by the law. Otherwise one would have no recourse where he got an automobile without motor or wheels."

Clauses Hidden in Small Type Ruled "Trickery"

A New Hampshire judge in the last century, refusing to hold contract clauses hidden in this manner by small type and thus concealing provisions in favor of the seller to be valid, expressed his contempt for this method of trickery in language that has become classic.

"The compound unless the reader were an extraordinary man, would be an inexplicable riddle, a mere flow of darkness and confusion. Some of the most material stipulations are concealed in a mass of rubbish on the back where scarcely anyone would think of looking for information, that the company claims a special exemption from the general operation of the law of the land.

"As if it were feared that notwithstanding these discouraging circumstances some extremely eccentric person might attempt to examine and understand the meaning of the involved and intricate note into which he was to be entangled, it was printed in small type and in lines so long and so crowded that the perusal of it was made physically difficult, painful and ingenious.

"Seldom has the art of typography been so successfully developed from the diffusion of knowledge to the separation of it. As a contrivance for keeping out of sight the dangers the system displayed a degree of cultivated ingenuity which if it had been exercised in any usual calling, would have merited the strongest commendation."

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Construction Rates Vary with Population Increase

The huge element of population that depends upon the construction industry for its livelihood can take comfort from the booming birth rate in this country, says Thomas S. Holden, president, F. W. Dodge Corporation, New York construction news and marketing specialists.

Writing in "Architectural Record," Holden reviews birth trends in relationship to construction trends, going back to studies he reported 20 years ago.

By means of statistics he establishes that birth rates and construction rates move closely together.

"Population growth is obviously a stimulator of construction demand in a dynamic society like ours," he stated. "The 1930-40 decade had a little over half the number of new persons that were added in the previous decade; it had a 58% decrease in number of new non-farm dwelling units and a 38% decrease in total construction volume.

"The 1940-50 decade had a 116% increase over the depression decade in number of new persons added to population; it had a 115% increase in new non-farm dwelling units and a 33% increase in total construction volume.

"These comparisons illustrate an important relationship although they do not provide any mathematical formula for measuring the relationship. Growth is the primary creator of construction demand."

The same relationships were found in a study made in 1932, as to construction trends in fast-growing cities as compared with slow-growing cities, population-wise.

The immediate building program for wartime and postwar babies is a school building program which has already reached boom proportions and promises to continue at boom levels for quite a spell ahead.

The school-age population, age five to 17, is expected to move upward from 31.6 million in 1950 to 43.1 million in 1960.

Just now the elementary schools are booming and they will continue to boom through 1958, perhaps longer if the birth rate holds up. The high school boom will definitely carry over beyond 1960 and then will come the turn of the colleges.

Babies do not immediately require new houses, but as they grow a little older and acquire little brothers and sisters, their parents are likely to build on additions or even to move into bigger houses. With prosperity, they will want the bigger houses with bigger rooms.

Along with the schools and the bigger houses will come the demand for community facilities of all kinds, public and private. Water supply and electric facilities must be expanded; neighborhood stores and drive-in shopping centers will increase; public health and recreation facilities, churches and parish houses and Sunday school rooms will be required; in fact, every type of facility for civilized living.

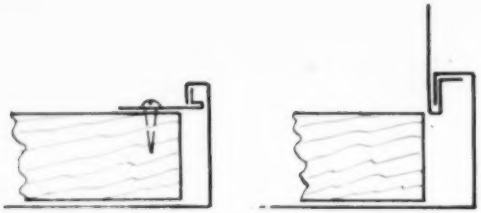


Fig. 1

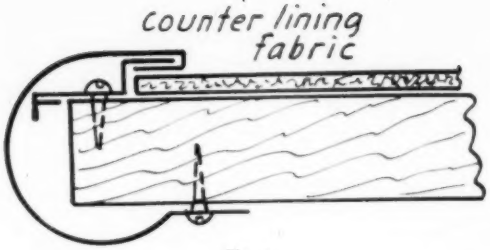


Fig. 2

How to Trim Counters with Stainless Steel

Ernest E. Zideck
Sheet Metal Consulting Engineer

The importance of stainless steel used as trim in restaurants and similar establishments can hardly be overestimated. Among its advantages are the ease with which it can be worked, its low maintenance cost, and its attractive appearance. Local sheet metal contractors are installing stainless steel as wall linings and counter trim in steadily increasing applications.

IN FIG. 1 is shown a novel method of covering tables or desks with sheet metal. The sheet is notched out for corners so that the narrow flanges, fitting inside, receive the solder and the outside of the metal remains smooth and solder-free. The covering is made with about ¼ in. protruding over the wood on each side. The down flanges are longer than the thickness of the wood, and the metal is braked to form a gutter or cup, which upon insertion of the covering, passes the wood. Holddown strips are formed which hang down from the cup, allowing the covering to come down over the wood. The strips are then turned and placed horizontally for nailing to the underside of the table. The fold in the strip holds the metal, and keeps it from bulging.

Metal linings over fronts of counters

Counters and bars are commonly covered with linoleum-like fabric or similar smooth and fluid-repelling material. This layer of fabric is held to the underlying wood by diverse metal linings, one of which is illustrated in the sketch in Fig. 2. This is a fancy metal formation, but it gives the counter edge an attractive tube-like terminal. The formation permits the inward turn of metal to engage the nailed down holding strip. The extended fold of the metal is there to prevent the outer metal from moving inward and disengaging it from its holding strip. Wood screws are hidden from view with this type of metal lining.

Stainless steel lining a bar

While counters and bars are embossed with metal principally for holding in position the layer of fabric or other commonly used material covering the wood, metal along the edge has also the function of preventing spilled liquids from flowing down over the edge and onto the customers' clothing. The metal finial shown in Fig. 3 is one example. A holddown strip is formed as shown in the sketch. It is fastened to the wood by short screws. Its hook-like formation reaching over the fabric permits the inward-turned metal of the exterior strip to slide into place. Its fold upward prevents the outer metal from bending in. When installed in long strips, the inward turned metal of the outer formation will be slightly opened. This is remedied by using a block of wood and hammering on it, closing the lock tight over the fabric.

Another pattern of counter edge lining

Fig. 4 shows a comparatively simple but decorative counter edge lining. Its radial portion is formed halfway first, permitting the braking of the inward turn of metal that comes to rest on the fabric. The strip is then completed in its full radial and braked to fit the underside of the wood, as shown. The inner strip that fastens to the wood is not difficult to form. This information al-

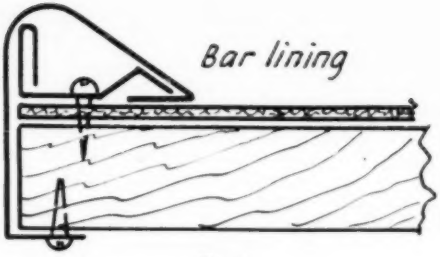


Fig. 3

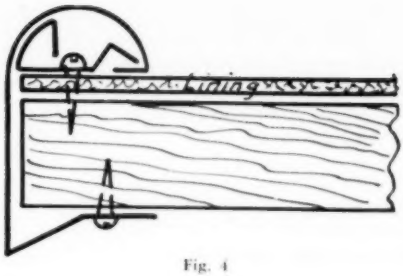


Fig. 4

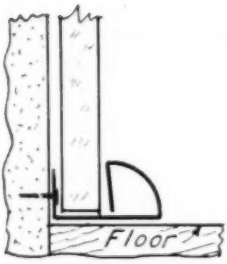


Fig. 5

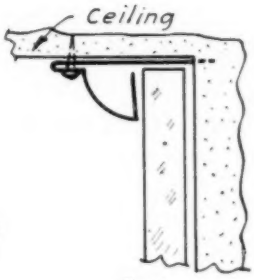


Fig. 6

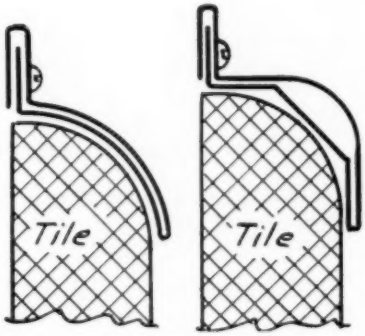


Fig. 7

lows the locking parts to engage each other. By holding the outer strip at an angle, it is easy to slide the metal under the edge of the holding strip. No hammering or forcing is required. Wood screws or nails can be used to fasten the outer strip and they are not exposed to any contact with persons leaning against the counter.

Floor and ceiling finials to wall paneling

Any kind of metal paneling used for walls requires some kind of a start at the floor and a finial at the ceiling. It would be a poor appearing kind of job if there were no nails showing in the wall panels, but a row of them showing at the floor and ceiling. The common practice is to form strips of metal into shapes such as shown in Figs. 5 and 6, with the cups of Fig. 5 used at the floor level and the straight flange of Fig. 6 used at the ceiling.

The cup in Fig. 5 is nailed by its rear flange to the wall. The cup bottom lies flat on the floor. Panels repose in the cup and are held tight between the rear flange and the metal of the ornamental finial. The inside flange of the radial part is bent slightly inward, so that the top of the finial rests against the panel.

The ceiling finial, Fig. 6, hides the ends of the panels and holds them in line besides lending a decorative finish to the paneling.

Tile and windows and door frame holding strips

In older buildings, the tile often comes loose from the plaster, especially in rest rooms and dining rooms where glass tile is used for wall lining, due to the stresses and strains of timbers in the building frame.

Stainless steel strips can be formed over the tile, as shown in either of the two methods in Fig. 7. These

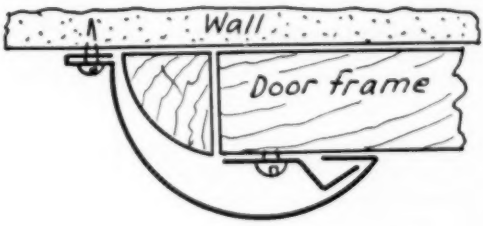


Fig. 8

Fig. 9

prevent the tile from separating any further from the plaster and to close the openings. The metal is so bent that it contacts the radial portion of the tile and holds it in position.

Window and door frames can be held to the wall by the two stainless steel strips shown in Fig. 8. The inner strip is made of heavier gauge metal and is fastened by a

long wood screw through the frame to the wall. The circular strip is provided with an inward pointing flange which engages the bent-up flange of the inner strip, holding it tight against the wood. The doubled-up end of the circular strip eliminates the sharp metal edge, preventing any cutting into the plaster. The doubled metal also presents a more solid support for the head of the wood screw. Various other formations have been used, but those shown here are the most practical.

Making up desired panel lengths

Frequently it is necessary to make panels for metal wall coverings in a brake of less capacity than the required panel length. The piecing together of panels is often necessary when the distance from the floor to the ceiling is over 10 feet. Whenever two or more pieces of a panel are required to complete the vertical dimension, it is necessary to consider the experiences gained from previous installations.

No sharp edges can be permitted on the outside of the metal, particularly in a notched-out corner where the corner is exposed and where panels must be notched for braking. When paneling is made from suitable sheet widths or short lengths flanged on all four sides for stiffness, the best practice is to hide the notchouts in the corners by panel holders made of sheet lead, as shown in the upper drawing in Fig. 9. Vertically the panels in Fig. 9 are held one to the other by their flanges and to the wall by the strip (upper drawing, Fig. 9), which is bent right and left over the metal of the panels. In some cases, soft sheet copper has been used for this strip, but lead is preferred.

Three Generations Follow Metal Workers Trade

Three generations of Mesa, Ariz. sheet metal workers are employed at the same shop. They are Elmer Porr; his son, Evander Porr; and the grandson, Evander E. Porr.

Elmer Porr began his career at the age of 15 in Pittsburgh. He started as an apprentice, which meant he did the cleaning up and tool carrying; he earned $3 for a 48-hour week. A journeyman in those days — 1907 — earned the large sum of $20 for a 48-hour week.

Elmer Porr has spent 45 years in the trade and has seen many changes during that time. The one that brings a glow of pride, however, is the formal apprenticeship program initiated many years ago, which has brought the grandson into the business.

He said, "When I started, an apprentice learned just as much as he wanted to absorb. We served a four-year apprenticeship and then became a journeyman, good, bad, or indifferent.

"Things are different today", he continued. "My grandson will go to school four hours a week and he gets guidance and advice from the Phoenix Sheet Metal Joint Apprentice Committee. That group is composed of representatives from the Phoenix Sheet Metal Contractors Association and Phoenix Local Union 359 of the Sheet Metal Workers International Association.

"Even though he gets a better training than I did, the job is far more complex. For example, in 1907 air conditioning consisted of a big blower blowing air through dripping water to wash the dirt out. Now we have refrigeration and forced air heating and other complicated devices.

"I can remember when heating consisted of a warm air furnace in the basement that fed heat to the rooms by gravity. Now, the problems encountered are multiplied and complicated beyond the conception of the 1907 sheet metal man."

Evander Porr, the second generation, isn't exactly an amateur in the business. He started when he was 17 and has been in the trade 20 years. He started his apprenticeship just about the time that the intensive training program got its start and has received the benefits of both eras.

As Elmer Porr watched the newest Porr metalworker do a job he said, "We didn't use pressure to bring the boy into the trade though both of us are mighty proud to have him with us. We might have tried to influence him but he made the decision himself."

The third generation, Evander E., has been working on the job since early spring. When school starts next fall, he will begin putting in four hours a week of his own time at Phoenix Technical School, specializing in mathematics and related subjects. Besides, he will be required to put in a 40-hour week on the job, working with and under a journeyman. It might be his dad or granddad or any other journeyman in the shop since apprentices are shifted around to give them a varied background.

He says, "I really like this work and if it is good enough for Dad and Grandpa, it's good enough for me. They give me some help and advice but I try to learn for myself. I want to be as good a journeyman as they."

Left to right: Roy L. Hawley, Apprenticeship Representative, Bureau of Apprenticeship, U. S. Department of Labor, Phoenix, Ariz.; Evander E. Porr, apprentice sheet metal worker; his father, Evander Porr, journeyman sheet metal worker; grandfather Elmer Porr, journeyman sheet metal worker; and Denby L. Stiles, employer of the three generations of the Porr family, and co-owner of Stiles & Allen Air Conditioning Co., Mesa, Ariz.

The Office Force Is a Sales Force

The importance of a firm's office force in creating company good will is often overlooked. Although behind the scenes in their actual contact with customers, the potential influence of office personnel upon customers may be long lasting. Important orders may stand or fall by past treatment customers have received.

AT FIRST GLANCE it may appear that the office force of a business is made up of persons who never contact the public, and therefore have no opportunity for making either a good or bad impression on the public for the firm they represent. It would appear that this type of business personnel could neither add to nor detract from the general impression a business makes. It certainly would appear that office personnel would have no bearing upon the effectiveness of a business' general advertising program.

But this is far from the truth. Even in the best regulated businesses, errors occur in bookkeeping, in billing departments, in accepting orders, etc., and a customer may come into the offices or telephone for an explanation.

Courtesy essential in handling complaints

The office worker who handles such a call must be the personification of tact and courtesy. The error must be explained in such a way that an unfavorable reflection will not be cast upon the business or upon the customer. It must be made in such a way as to leave the impression that a mistake of this kind happens once in a thousand years. No one is impressed by a business that makes frequent errors. But, paradoxically, out of an error can grow a considerable amount of good will and prestige, if the office force handles a delicate situation tactfully.

In a case of this kind, as in any business dealing, a high degree of integrity is called for, as well as a full knowledge of how and why the error occurred. Full assurance that the mistake won't happen again must be given, and then it is up to management to take any specifically necessary steps to guarantee that such an error does not recur.

An indifferent or arrogant attitude on the part of an office worker in any dealings with a customer or prospective customer can drive business away from the firm and over to a competitor. It can also have a long-range effect on the business, because such a reputation spreads. An irate customer always is quick to tell others of the ill-treatment he has received at the hands of any representative of a business organization. This is the adverse word-of-mouth advertising at work again. There is nothing more damaging to a business, if it is permitted to persist, if concrete and direct steps are not taken to change the opinion of the public.

Each of us, at one time or another, has experienced instances when the treatment received in an attempt to straighten out an error has made us resolve to take our business elsewhere. On the other hand, we can recall occasions when we had entered a place of business with the intention of ending the relationship once and for all, but left completely satisfied and with a better impression of the business than ever before, just because an employee of the company treated the case sincerely, fairly and courteously, and because we were convinced that it would never happen again.

All salesmen not in sales department

Some time ago an outstanding American merchandiser was overheard to say, "I don't fear the average good salesman of a competitor, although his work is important and he garners a lot of business for his company. My deepest awe and respect goes to the firm where *everybody* sells."

It is indeed a mistaken notion that the clerks, office people, correspondents, and others do not contact the customer. It may be true that the majority of the central office force never comes face to face with the customer, but the way his account is handled, the manner in which his credits are entered, the care with which invoices are made out, the speed with which they are handled, to say nothing of simple, all around good service, all are functions influencing sales one way or another.

The correspondent should remember especially that courtesy, thoughtfulness, a selling attitude, can be demonstrated in a business letter. Brevity is more than the soul of wit; it has a definite place in good letter writing, but abruptness and rudeness, while they may save words, have no part in a business letter. This type of approach through the written word will drive customers away. Charming letters build good will—they aid in retaining customers.

The office force, by the way it handles a situation, by the way it approaches the public, whether personally or through some other medium, is definitely a good or a bad advertisement for a business. Let's make sure that the office force is a good advertisement. It will build business and make our general advertising dollars more effective.

(This is the seventh in a series of articles by W. Frank Welch, president of The Ad-Ver-Tis-Er, Inc., on "Making Ourselves Acceptable")

William Ehlert standing beside one of his five trucks which are equipped to carry 30-foot gutters.

He Ties Sales, Service Together

Robert F. Welch

The combination of sales and service in a sheet metal shop operation, plus the time-tested doctrine of "the customer is always right" have paid extra dividends for this contractor. A careful follow-up of customers has enhanced the company's reputation. Up-to-date shop methods have further added to the firm's efficiency.

IT IS A POPULAR habit for heating dealers and other types of enterprises to erect signs announcing that they handle both "Sales and Service". Altogether too frequently the public pays little attention to such signs. People have learned that some establishments are essentially only showrooms, even though they announce service facilities, while others are little more than repair shops who make no attempt to sell.

"Sales and Service" more than just a phrase

Yet the alert heating and sheet metal contractor can well take his cue from the meaning behind the phrase "Sales and Service". A well-rounded operation is one that means the owner enjoys greater returns because he balances his activities for maximum effectiveness. He knows that sales mean more than merely taking orders for furnaces or sheet metal installations and service goes beyond making maintenance calls.

Such a business philosophy has proved of tremendous value to a sheet metal and heating firm, the William F. Ehlert Co., San Jose, Calif. Their business has been built on service—service which opens a broad avenue to further sales. One of their most important guiding principles has been that old philosophy, "The customer is always right".

Twenty-four hour service pays off

"We have two maintenance men available 24 hours a day, seven days a week, to answer service calls," Ehlert explains. "They take their service trucks home with

them and each truck is equipped with a full set of furnace controls and all the necessary tools. Every furnace we install carries a year's unconditional guarantee. And we really mean that. We make it a point to turn every disgruntled purchaser into a satisfied customer."

It frequently happens that those who are dissatisfied with furnace installations have dealt with some other firm. Ehlert doesn't mind setting such deals right, and doing it at a fair price. "There may be ten people involved in such a controversy," he points out. "If we have a chance to turn a sour customer into a happy one we'll take it every time. Every case of that type is worth $100 in advertising to us. Frequently those ten people begin giving us their business and sending referrals. When an unhappy customer is satisfied, we have helped to re-establish the industry's good name and at the same time we are helping ourselves."

Ehlert realizes that regardless of how carefully he cultivates a reputation for service and fair dealing, he must still operate efficiently in order to maintain his competitive position. He has found that one of the best techniques for cutting down costs is to fabricate in the shop whenever possible.

Modern shop methods accelerate operation

Some of the methods he has worked out have proved very effective. For example, there's the 45-foot gutter bench which greatly improves workman efficiency. This bench makes it possible both to straighten and level a gutter in one easy operation. It is also good for cornice faces, or any unit whose length makes it unwieldy. The bench is made of a standard, wide flange 14-inch "H" rail. When the contractor first proposed using this rail, the objection was immediately raised that it would absorb heat from the gutter and soldering would be impossible. In actual practice, however, it has worked out very well.

Gutter work is further expedited by placing soldering irons on a movable heating stand. The stand is set on casters so it can be rolled to any position along the rail which the mechanic desires.

In order to take full advantage of economies resulting from long-length shop fabrication, Ehlert has equipped his pick-up trucks with standards which make transportation to the job a simple matter (see illustration). Welded pipe frames have been placed at the rear of the body, another just behind the cab, and one at the front bumper. This provides supports 30 feet apart for long gutters. The firm operates five trucks.

Showroom a necessity for sheet metal dealer

The entire 40 x 80 shop is laid out so every job entails the least possible amount of waste motion. It's only a few steps from the shear to the bench. Sheet metal stock is stored on shelving below the benches, with the most used dimensions toward the top where they are easily available. Space is at a premium in the Ehlert shop, so none is wasted.

"When we moved into this building four years ago, we were not sure it was advisable to make the extra investment for the 20-foot showroom," Ehlert admits. "But I felt it was necessary in order to realize the long-profit sales volume we hoped to obtain. Although over the counter sales have not become an important part of our operation, they are well worth going after."

Guido Castagnoli demonstrates how a long gutter is handled on the "H" rail. Soldering irons rest on a mobile stand which can be easily moved to any spot.

Seasonal merchandise is pushed by placing large banners in the window to attract customer attention. During the winter, for instance, sale of furnace filters is encouraged. Every purchaser who comes in for a filter is naturally a prospect for other goods or services. The showroom itself is neatly arranged with small "impulse" items lining the front window where they can be easily seen by potential customers passing by.

Classified telephone directory a useful advertising medium

Ehlert believes that his most productive advertising investment is in the yellow (classified) pages of the telephone directory. He follows the practice of having the firm name listed under several different categories — thereby reaching the widest possible cross section of people. This cannot be done indiscriminately, however, since the value of multiple listing depends largely on what competitors are doing along similar lines. A careful analysis of the classified section may reveal different possibilities in each locality.

In line with the growing national trend toward the sale of air conditioning equipment, Ehlert has done considerable spade work in the promotion of evaporative coolers. Sales have been steadily climbing in this department over the past several years.

National Heating Wholesalers Stress "Better Selling"

President Fred R. Green *(at right)* presents Past President's Plaque to Arthur M. Vorys, Vorys Bros. Inc., Columbus, Ohio.

THE SUMMER MEETING of the National Heating Wholesalers' Association, Inc., was held last month at The Ritz-Carlton Hotel, Atlantic City.

The opening session was called to order by Association President Fred R. Green, head of Des Moines Furnace & Stove Repair. Reports from the various chairmen of the 14 standing committees were heard, presenting the data on the work which has been accomplished in the past year; this information will shortly be made available in the form of an association bulletin.

The Friday afternoon activities consisted of an ocean cruise for would-be sailors. This occasion served to bring association members and guests together on an informal basis. William F. Fox, Heating Trades Supplies, Inc., Toledo, acted as "Captain and Admiral" and kept the entire party amused by his stories.

Heating Wholesalers' Problems in 1952

M. Gardner Smith, assistant to the president, Noland Company, Newport News, Va., presented a paper on the topic "Problems Confronting Heating Wholesalers Today", in which he stated that he felt business would remain at a high level, at least through the November election. After the turn of the year, he did not care to hazard a guess. The fact that there are more bond claims in existence today than ever before serves as a warning signal for business men to review their individual situations, particularly regarding accounts receivable. Smith stated " . . . a review of the financial picture of ourselves and our dealers at regular intervals could save a lot of possible future headaches."

The situation since the war has so radically changed that customers are now demanding what goods they actually want rather than being thankful for what they might get, including shortages and back orders. Smith suggested that wholesalers should strive for complete and well-rounded inventories in order to generate sales.

The most serious problem confronting the wholesaler, according to the speaker, is the fact that the wholesale trade has lost a portion of the heating business through the encroachment of the mail order house, the DTU, the manufacturers' commissioned agent, the factory-dealer franchise, and the appliance store. His solution to the problem of how to reclaim some of this lost business was summed up in his closing remarks.

"Today, whether we like it or not, the picture has completely changed. Changed too is our opportunity. The heating business has not disappeared at all. There is more heating business out there for someone than ever before by virtue of the increase in new home construction—a much greater percentage of new homes specified for central heating systems—and the ever-increasing market for replacement and modernization. The expansion of natural gas usage has given even a greater boost to mechanical firing and there is even a more wonderful opportunity for each of us if we accept the challenge."

Lear Speaks on Opportunities for Selling

Robert W. Lear, manager, advertising and sales promotion department, American Radiator and Standard Sanitary Corporation, delivered an address, "Present Selling Opportunities".

Lear prefaced his remarks by suggesting that what he would say might be considered hypercritical by some of those present, but that he felt obligated to state his case. His position as sales promotion manager entails mass selling, which involves making the work of the individual salesman more effective. The concept of mass selling or sales promotion is not a substitute for personal selling, but a supplement thereof.

The programs he represents have two prime aims—to create desire for better modern heating in the minds of consumers and to develop a network of retailing contractors who will contact the public and sell the represented products.

Lear stated that the development and training of these

retailers requires both personal selling and regular contact. "Someone who knows the local set-up, who has the retailers' confidence, who can offer the consolidated help of several manufacturers of different products, and who has the profit motive strongly in mind, is the ideal medium for carrying on the retailer development program."

The speaker presented twelve objections which heating wholesalers have raised against participating in the task of dealer development. Although he took issue with most of these reasons, Lear admitted that some of them were backed up with actual case histories.

Due to the attitude of the wholesalers, Lear claimed that four situations have developed: (1) Much business has been created by mail order and retail stores who buy direct from manufacturers; this lies mostly in the modernization field, and little of it is sold through wholesalers; (2) Retail buying cooperatives have been developed, including large numbers of retailers who buy directly from supplying manufacturers; (3) An attraction to both manufacturers and dealers, particularly in the heating industry, is selling on the basis of a franchised dealership, by-passing the wholesaler on major equipment purchases; (4) A lack of sufficient aggressive store-owning retailers to give manufacturers an effective national network of retailers for sales campaigns and programs.

Distributors' Responsibility in Creating New Business

The speaker stated his encouragement in the number of heating wholesalers who have begun to enter into better retailing. These distributors have realized their responsibility to help create new business in their respective areas. This is helped along by letting the manufacturer share the bulk of the expense load; furthermore, more distributors are facing the fact that the public buys from retailers rather than wholesalers. Furthermore, "These distributors who are developing better retailers have recognized the fact that regular advertising and promotion of a well-known brand of heating equipment from a modern store brings profit-making sales volume to the retailer who does it. This is no longer a theory. It is a fact. Thousands of retailers are proving it right now."

Wholesalers are beginning to find that a heating contractor, to do a thorough job of merchandising, must have adequate sales training. This presents another dilemma, because the mechanical training which the dealers need least is what they are most interested in; the sales training which they do need, they are less interested in, unless they have the backing of an interested wholesaler.

Lear suggested three concrete recommendations for a better retailing program for distributors, consisting of the appointment of a sales promotion manager, setting up a list of key retailers, and setting up a school for retailers to appraise them of recent developments, and particularly in the art of selling.

Officers of the National Heating Wholesalers Association (l. to r.): treasurer, Jack Eckstein, Eckstein Co., Pittsburgh; president, Fred R. Green, Des Moines Furnace & Stove Repair, Des Moines, Iowa; vice president, George F. Wheelock, George G. Wheelock & Co., Birmingham, Ala.; secretary, Gail C. Mason, Warm Air Heating Supply Co., Dearborn, Mich.; and past president, Arthur M. Vorys, Vorys Bros. Inc., Columbus.

According to the speaker, such a program will lay the groundwork for launching new products and special selling campaigns. In conclusion, he stated "We know that adequate quantities of heating equipment cannot be sold without adequate follow-through promotion. We believe that one of the functions of the heating wholesaler is follow-through promotion. We think that the most efficient technique of selling heating equipment *should* be through the wholesale distributor, although there are many manufacturers and dealers who disagree."

Contrasting American Revolutions

A challenging address entitled "The Two Revolutions" was delivered by DeWitt Emery, president, National Small Business Mens' Association. This thought-provoking speech presented the two directly-opposed revolutions which have taken place within the past 175 years in the United States. The first American Revolution was described as the assumption of power by the colonists from the British government, according to the tenets laid down by the Founding Fathers in the Constitution and the Bill of Rights. The effect of the second revolution, which has been going on for the past two decades, has been the gradual transfer of power from the people back to the government. The insidious effect of the second revolution has been so all-enveloping that a majority of the American people have not realized its gradual ascendancy to power, he said.

In the course of his remarks, Emery stated: " . . . the American people were bribed away from their traditions, shorn of their power. As long as the government was dependent on the people for support, the people remained free. What happened was a gradual reversal of this principle."

The Responsibility of the Franchise

Gordon Jeffrey, Clerk of Courts, Lucas County, Ohio, was the luncheon speaker on June 7; his opening comments were based around the theme that the primary duty of all good citizens was to make sure that all of us were registered to vote and that we actually do vote. He cited statistics on the last two national elections, pointing out

One of the ladies tables at the convention banquet; (l. to r.): Elinor Vorys, Columbus; Mrs. Arthur M. Vorys, Columbus; Mrs. George F. Wheelock, Birmingham, Ala.; Mrs. Gail [illegible]a on, Dearborn, Mich.; Miss Lynn Wyman, Baltimore; Mrs. Irving Abrams, Charlestown, W. Va.; Mrs. Fred R. Green, Des Moines, Iowa; and Mrs. Jack Eckstein, Pittsburgh.

that we cannot expect any improvement at any level of government as long as so many people remain away from the polls on election day. His political IQ test was a masterpiece of presentation on the proposition that all Americans can join the ruling class of the nation, simply by taking the few minutes which are necessary every election day to vote.

Afternoon Social Activities

The activity for the afternoon of June 7 consisted of the annual Association Golf Tournament, held at the Atlantic City Country Club, under the direction of Robert Woodward of Palmer-Donavin Co., Columbus, Ohio.

At the annual banquet, open to all members, manufacturers and the ladies, the toastmaster was W. F. Fox; as usual, he did a good job of making the event a real social success. The golf prizes for the afternoon's tournament were awarded at the dinner by Robert Woodward. In the manufacturers group, James Crombie, vice president, Henry Furnace Co., Medina, Ohio, was presented with a silver ice bucket, for his low score of 103, while C. E. Smith of New Castle, Pa., led the wholesalers with an 80, and was given a silver tray. E. Marre, of The C. A. Olsen Mfg. Co., Elyria, Ohio, won the blind bogey. George Sprick, of Modern Equipment Corp., New Haven, Conn., had the most number of birdies. Adam Patsky, of Ohio Furnace Co., Inc., Columbus, won the high gross.

President Fred R. Green presented an illuminated scroll to past president Arthur M. Vorys, Vorys Bros. Inc., Columbus, Ohio.

An award for the best use of the association insignia on stationery, bill heads, etc. was awarded by Elmer Drebus, of Demmler Bros. Co., Pittsburgh, to Heating Trades Supplies, Inc., Toledo, Ohio.

A feature of the banquet was the moving of all the association officers from the head table, and the officers' wives installed in their husbands' positions at that table; W. F. Fox then had each of the wives substitute for their husbands in making speeches.

Air Conditioned Polo Mallets

Air conditioning is making an interesting and unusual contribution to the world of sports by providing favorable humidity conditions for the manufacture of quality polo mallets. The installation was made by the Mid-Island Utilities Co., Inc., Westbury, Long Island, N. Y., which has designed and installed a system for Gray's Saddlery there.

Gray's, a specialty shop which fabricates mallets on the premises, has, for many years, met the exacting equipment requirements of polo enthusiasts in this community, which is the home of the famous Meadow Brook Club.

The heads of polo mallets are made from bamboo roots and their shafts utilize a special cane which grows only in the Malayan jungle. The wood, after cutting, literally drips with moisture because of the extremely high humidity in this region.

In former years, for drying, the wood was left to stand for a period of more than five years, a practice which proved both uneconomical and unsatisfactory. Gray's developed a special dry kiln process to take the greenness out of the wood more quickly, thereby speeding up the entire mallet manufacturing process. However, due to high humidity conditions in Westbury, the kiln-dried wood was also found to be reabsorbing moisture.

Faced with the problem of combatting this effect, Gray's turned to humidity control through air conditioning. The system uses a 3-ton United States Air Conditioning Corporation upright conditioner, which delivers cooled and dehumidified air not only to the shop's rear mallet fabrication room, but also to its general workshop and the main store area.

Salesmanship Improves the American Way of Life

The logical partnership of wholesaler and dealer in the sheet metal industry is potentially a powerful selling agency, offering increased opportunities and financial remuneration to both contracting parties. Carried to its successful conclusion, with both parties doing their part, new products are presented to the buying public.

IN A SPEECH presented at the recent Ohio State Sheet Metal Contractors' Association annual meeting, Harry Bowser, Director of Sales Education, Thomas A. Edison, Inc., brought out the obvious connection between Salesmanship and the American Standard of Living:

"The importance of salesmanship to other people may be recognized through an analysis of what it really does for people. When the record of selling is studied, it will be found to have been of immeasurable value in raising our standard of living. Through salesmanship we have accelerated the changing of raw materials into the comforts of modern life.

Salesmanship Must Create Desire for Products

"The study of salesmanship will also reveal that people must be persuaded to improve their mode of living. The fact that people have needs is not enough. Needs are unimportant. It is wants that count. Women don't need vacuum cleaners — they used a broom for hundreds of years. Women don't need washing machines — they used a washboard for generations. Only when the American salesman created in the minds of women the desire for a better way of sweeping and a better way of washing clothes, did women turn to these modern conveniences which have given them a better way of life.

"It is a known fact that people must be persuaded to improve their living. A simple example for the need of salesmanship is the early history of the American bath tub. The first installation of a bath tub in the White House was made in 1850. Yet, 30 years later, very few American homes had a bath tub or even running water. When manufacturers of plumbing equipment tried to sell bath tubs, people did not want them. Several states placed a heavy tax on their use. New York State, for example, taxed each tub owner $30 a year and even passed a law forbidding the use of bath tubs except on medical advice. These taxes and laws had to be overcome by means of salesmanship that corrected widespread ignorance.

"Another example of the need of salesmanship is the history of the ordinary farm plow. At the time of the American Revolution, farmers made their plows out of crooked tree forks. The implement was so crude and inefficient that it only scratched the soil and required a small herd of steers to drag it over the ground. Charles Newbold of New Jersey invented a metal plow to turn the soil in deep neat furrows. The use of this plow required only one man and two oxen. In 1797, Newbold patented his metal plow and showed it to the other farmers. They refused to consider it favorably because they believed that the iron plow would poison the soil and produce only weeds. When he showed the New Jersey farmers splendid fields of grain for which his metal plow had turned the soil, the farmers refused to listen and went back to the use of their old wooden plows. Newbold failed to introduce his labor-saving device to farmers, but later the American salesman persuaded farmers to adopt the metal plow. The same kind of history has taken place with most of our commonly accepted labor-saving devices.

"Even after the sewing machine and the electric washer had been on the market for many years, thousands of women still preferred to sew by hand and to rub clothes over a back-breaking washboard. Salesmanship was necessary to induce them to use the things they needed.

Human Obstacles to Overcome by Salesmanship

"Years ago, American businessmen and their secretaries did not want the typewriter. The businessman of the early day was proud of his penmanship and he could not imagine himself sending out a letter to his customers in typewritten form. The secretary fought the typewriter saying that it would give her nervous prostration and cancer of the fingers. The same thing is true of dictating equipment, calculating machines, and the many other mechanical devices that have made the American business office the efficient workplace that it is today.

"People have to be taught to want the good things in life and to pay for them in order to really enjoy them. The intelligent salesman knows that his efforts cause people to raise their standard of living. The salesman also knows that his efforts help to reduce the cost to consumers. He knows if only 1,000 persons without benefit of salesmanship use an article, it may cost $10, but when salesmanship is applied, the lowered production costs may bring the price down to $5 or even $1.

"When salesmen get enough orders, manufacturing costs are bound to be reduced. In the long run, consumers benefit from effective salesmanship. The intelligent salesman does not offer apologies for selling. Rather, he is proud of the fact that the results of his selling make him, economically speaking, a public benefactor.

"This country is now standing at the threshold of its greatest selling era. Now we must sell peace. Now we must sell prosperity. Now, as never before, we must sell to ourselves and to the world our country's magnitude, its industry and wealth, its ingenuity, and its understanding of peoples' basic welfare. However, if we are to attain these inspiring objectives, we must first sell our country's goods, and services.

"Taking on this selling job is what the wholesaler expects of the dealer. He will give him every bit of assistance he can. This is the Wholesaler-Dealer way of doing business.

"The state of the U. S. economy for some time to come will be determined by how much we can sell. The present opportunity to sell is a challenge to the vigor and ingenuity of United States industries' salesmanship. Don't alibi by complaining about government controls. There is very little in controls now that hampers business, and that will gradually disappear."

Gas Utilities Add 1½ Million Househeating Customers

The gas utility industry added 1,514,000 new gas househeating customers during the 1951-1952 heating season, the American Gas Association reported recently. This compares with 1,014,000 gas househeating installations made in the preceding heating season, and raises the industry's composite gas househeating saturation to 44.7 per cent.

It is estimated that the 1952-1953 heating season will bring an additional 1,079,000 new gas househeating customers and that during the 1953-1954 and 1954-1955 heating seasons respectively, about 1,084,000 and 1,057,000 new customers will be able to utilize gas for heating their homes.

These totals represent estimates for the entire gas industry based on data supplied by reporting companies to the Bureau of Statistics, A. G. A. In the study made by the association, reports were received from 295 companies serving 21.6 million residential customers, equivalent to 91.5 per cent of the industry's total number of residential customers.

The gains estimated for the next three heating seasons are based on expectation of a gradual modification of heating restrictions imposed by the Petroleum Administration for Defense. Increased pipeline capacity and conversion of additional utilities to natural gas, particularly in New England, will permit the addition of many new gas househeating customers.

P. A. D. Order No. 2, issued in August 1951, limited new natural gas heating installations in certain areas. Utilities affected by the order were permitted to add new heating customers to the extent of one per cent of total gas customers annually. Two general exceptions were incorporated into the order. One exception permitted communities that had recently converted to natural gas to accept up to 10 per cent of total gas customers as users of gas heat during the first two years after conversion. Under the other exception, in communities where no gas service had previously been available, or in which fewer than 5,000 customers had received manufactured gas, no limitations were imposed.

The original P. A. D. order was effective in 15 states and the District of Columbia. An amendment to the Defense Production Act permitted this order to be set aside in states where the public regulatory body certified that it would assume responsibility for gas supply. To date eight states have so certified. The areas in which P. A. D. Order No. 2 is still effective are Connecticut, Delaware, District of Columbia, Massachusetts, Michigan, New Jersey, New York and Rhode Island.

Serious Manpower Shortage in Engineering Profession

A CRITICAL SHORTAGE of engineers in the United States for industry and the defense program has prompted The Advertising Council, Inc., New York 19, to accept an advertising campaign to urge qualified high school students to consider engineering as a career. The request for the campaign came from the Engineering Manpower Commission of the Engineers Joint Council.

The present shortage of engineers numbers 60,000. Industry alone needs about 30,000 new engineers a year for normal replacement and growth. Should the national emergency continue for some time, the annual requirement to fill the needs of industry and government would amount to about 40,000. The actual number of engineering graduates is expected to total approximately 28,000 in 1952, and only 19,000 in 1953.

To help meet this situation, The Council's advertising campaign will point out to high school students the opportunities existing in engineering today and in the years ahead, plus the advantages of engineering training in qualifying young men for positions of leadership in many fields.

REVERE COPPER FLASHING

SURVIVES 3 HURRICANES, 4 ROOFS AND 16 YEARS OF RUGGED WEAR WITHOUT ONE LEAK!

ANOTHER CASE OF COPPER WHERE IT COUNTS! Sixteen years ago . . . those were the days when you could get all the copper you wanted to flash a house . . . Revere Copper Flashing was applied to the "Home of the Century, Atlantic City, N. J." Now, under present conditions architects, builders and contractors are using what copper they can get where it counts the most for the very reasons it has performed so well on this "Home of the Century." But let's not give copper all the credit; proper installation had a lot to do with this performance, too. So, for a trouble-free flashing job, first specify or use easy-to-work, non-rusting, long-lasting Revere Copper; second, make sure it's properly installed.

For through-wall applications, ask the Revere Distributor about Revere Keystone Thru-Wall Flashing*. He also will advise you of the availability of materials and put you in touch with Revere's Technical Advisory Service should you want to discuss your technical problems.

*REG U S PAT OFF

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

"THE HOME OF THE CENTURY"
Steel Pier
Atlantic City, N. J.

Wm. F. B. Koelle
Architect
122 So. 17th Street
Phila.

May 1, 1946

Revere Copper and Brass Incorporated
230 Park Avenue
New York 17, N. Y.

Dear Sirs:

In answer to your question as to why I selected Revere sheet copper for all gutters, eaves, valleys, flashing and conductors on The Victory Home of the Century, I would like to explain my basic idea in designing and building this house.

My wish is to stimulate interest in building better homes. Naturally, The Victory Home of the Century is completely equipped with every convenience, and is beautifully decorated—for I want our visitors to know how deeply comfortable and attractive a moderate priced home can be made.

But this is not enough. The unseen parts of a house must be equally fine if the home is to be a place of happiness and freedom from care through the years. I have stressed this point with our visitors. And I have built accordingly.

I selected Revere copper for all exterior sheet metal construction because of Revere's experience as the oldest fabricator of metals in America. I am familiar with Revere's extensive research in sheet copper for building, and I know that there is no more imperishable material that can be used to seal a building against rain, snow, moisture and wind than Revere copper. The same reasoning holds true for the plumbing and piping, which are also of copper and brass.

Striking proof of the matchless performance of Revere copper is the way it has stood up in its exposed position on the Steel Pier through two hurricanes. In nearly ten years not a trace of a leak has occurred. Not a single sign of moisture has ever appeared on inside walls and ceilings. This fully confirms my own confidence in the lifetime service of copper.

I believe these facts are important to all who expect to build.

Very truly yours,

Wm. F. B. Koelle, Architect

NOTE: "Since writing the above letter 6 years ago we have had, last fall a year ago, another hurricane, violent enough to tear a large section of the Brighton Hotel Solarium away. Still not a leak occurred in 'The Home of the Century.'

"Four different manufacturers' roofs have been applied to the 'Home' in the past 16 years, but the original Revere Copper valleys and flashings are still intact."

Wm. F. B. Koelle

"The Home of the Century" was flashed with Revere Copper when it was erected in 1936. Revere Copper Water Tube and Revere Brass Pipe also were installed at that time.

The Need for Air Conditioning in the Southwest

W. R. Woolrich
Dean of Engineering, University of Texas

Census reports indicate a trend toward semi-tropical climates. Since man has found ways of providing a means of controlling his indoor climate, year 'round air conditioning is becoming increasingly acceptable.

SYDNEY F. MARKHAM of Great Britain propounded a dubious doctrine in his book, "Climate and the Energy of Nations" when he declared that people who live in cool climates have a superiority in energy and in world leadership. Markham proceeded to illustrate his point by citing Northern Europe and Northern United States as evidences of this superiority in both leadership and activity.

A century ago Markham would have had a case, but for conditions of the present period, he unwittingly revealed some doubts in his own thesis when he admitted that the Southwestern United States displayed high energy leadership, which furnished powerful exceptions to his arguments. To support his original claims, however, he seemed hopeful that such high energy demonstrations were only temporary. A review of some new observations that have upset Markham's hopes and claims are presented herewith.

Evidently the creation of man took place in an area between the annual mean isotherms of 70° and 80° F., according to either the Hebrew historical announcement of creation or to the anthropological explanation of the origin of man. For either procedure of development, man must have risen up to the stature of a human being in a very warm or tropical climate.

Optimum human temperature range 70 to 80 F

Man is still more content in a warm atmosphere than cold. He appreciates most a temperature condition between 70° and 80° F., and when he is exposed to ten degrees more than 80° F. or to ten degrees less than 70° he expresses his disapproval. Even the many centuries that the dark races have lived in equatorial areas or the similar long existence of the Eskimos in polar regions have not greatly affected their optimum living condition of temperature.

The discovery of fire and the inventions of shelter and clothing made it possible for man to migrate toward the temperate zones with reasonable success. His principal reasons for leaving his warmer climate were (1) to escape tropical diseases, (2) to be more free from tropical vermin and wild animals, and (3) to be able to store food without serious temperature decay losses.

His migration to colder zones cost him many more hours of labor annually gathering fuel, building shelters, making winter clothing and raising short season field crops to combat cold weather, but under ancient and medieval conditions it was worth the extra effort to be free from tropical handicaps.

In these transplantations he did a good job, as is witnessed by the advanced civilizations created. The cold climate accomplished even more; it changed many people from nomads to home-living people interested in vocations, avocations, education and community life. In fact, they did such a good job that they became quite intolerant of people of warmer zones, and in their zeal they have proclaimed that a cool climate is essential to high energy and high energy is essential to national or world leadership.

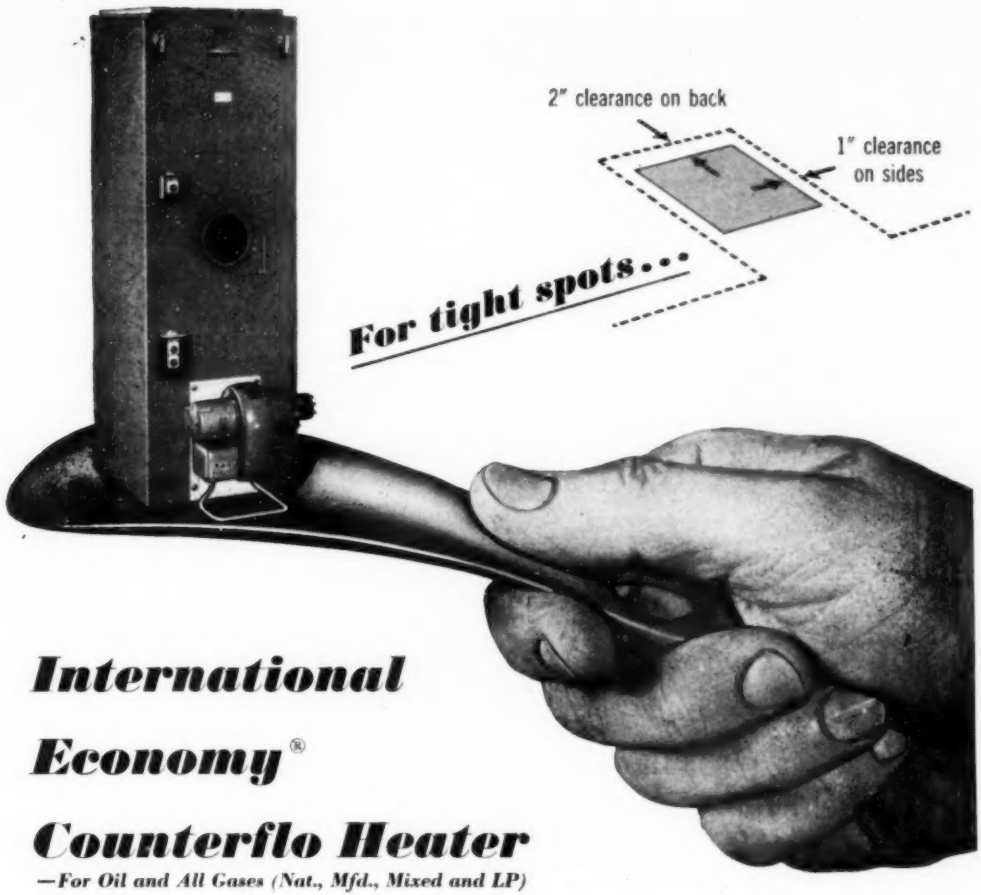
Fallacy of low temperatures tending toward high energy

There are, in 1952, many fallacies in their reasoning. What may have been true in 1852 is not factual in 1952.

One hundred years ago, the South and Southwest were periodically ravaged by yellow fever, malaria, hookworm, typhus and dysentery. There were few that escaped from the attacks of at least one of these diseases without either resultant early death or lingering years of a sluggish existence. Today these diseases have been largely conquered or put under control by the medical and sanitary engineering professions.

The vermin, insect life and wild animals of the tropical medieval periods are either placed under sanitary engineering control or are pushed back into game preserves in order that the land can be used for food and raiment production.

Food preservation by mechanical means has become so much a part of our established life that refrigerators are



International Economy® Counterflo Heater

—For Oil and All Gases (Nat., Mfd., Mixed and LP)

Only 23" square and 67" high, this Underwriters' and AGA approved International Economy Winter Air Conditioner can be installed practically anywhere—closets, alcoves, utility rooms. There's a huge potential for this Counterflo unit in the new small home market—for perimeter heating . . . for duct systems in homes with crawl space beneath the floor . . . for systems where entire crawl space is used as a plenum chamber. The International Economy Counterflo with its 100,000 B.t.u. oil heat output and 96,000 B.t.u. gas heat output covers them all. It's *convertible*, too!

Call your distributor now, or write us—cash in on this highly efficient unit for those *tight* installations . . . perfect for you and your customers.

Easy to install, too!

The burner, flue outlet, controls, motor, blower and larger sized cleanouts are all readily accessible from the front. It's a completely packaged unit—shipped factory assembled — one fan and limit control and an auxiliary limit control are supplied and *factory set* for *double* protection—in addition to the standard controls.

110 years of heating experience at your service . . .

INTERNATIONAL HEATER COMPANY

UTICA 2, NEW YORK

WESTERN OFFICE AND WAREHOUSE . . . . . 1911 WENTWORTH AVE., CHICAGO 16, ILLINOIS

sold from the equator to the Yukon and locker plants are distributed over all of our states, making every day of the year a potential hog killing day — a family event that even forty years ago could only occur during periods of sustained frosty weather.

Population trends reverting toward equator

Today millions of light-skinned people are living in the Southwest and the Gulf Coast areas under semi-tropical conditions at relatively high energy levels. In fact a review of the last census reveals that the trek that started northward centuries ago has now reversed itself and more people are moving back towards the equator. Within this southern area of the United States, more blonde race peoples are living today than have heretofore lived near to the tropics.

There is, for example, no question but that cold climatic conditions create within man more of an urge to move fast which in turn causes him to eat more high energy food. There are evidences that the long periods of sustained cold in our northern United States demand more of these people than does the semi-tropical condition of the Gulf Coast. The six Gulf states including Georgia had only 58 per cent as many white population deaths from heart ailments in the period of 1946 to 1948 as did the New England states. A similar figure exists between the Gulf and the Great Lake states.

Even cancer, the second killer disease of the United States, shows a relationship of only 57.5 per cent for the six Gulf States as compared with the six New England states.

There is much evidence that less rigorous weather where diurnal changes occur between hot days and cool nights is conducive to fully as effective creative action and thinking as is a climate that has alternations of weeks or months of cold and of heat, and this favorable condition prevails in most semi-arid tropical zones of the world.

Climatic locality has no marked effect on output of human energy

There need be no fear but that the people of the semi-arid regions of the Southwest can maintain their high energy position with the inhabitants of the other parts of United States or with northern Europe. The exhibitions on the football field and in similar sports indicate that southern teams do not lack energy. And historically, no one can challenge the energy of the Apache or the Comanche, yet for centuries those Indian tribes were sons of the Southwest.

In areas such as the southern part of the United States, the mandated Pacific Islands and in general, the regions of the world where the annual isotherms are above 67 F., there are usually more months of the year requiring cooling for livability than for heating. The author purposely avoids naming this comfort cooling because there has developed in the thinking of many law makers and non-technical people the assumption that "comfort cooling" is a luxury item to be associated with Cadillacs and mink coats. Livability cooling should mean the minimum essential cooling — either natural, induced or mechanical — that during the hot season will keep the productive and working people of an area at an economic level of health and normal activity not appreciably different from that of other seasons of the year.

Such a standard of cooling complements our commonly accepted levels of essential heating, to which our general society, technicians and government all subscribe, not only for human beings, but for every variety of domesticated animal life.

Cooling equipment use increasing in southern states

In the semi-tropical south, economic considerations force us to de-emphasize heating and to direct more of the building investment into cooling. Any of the forced warm air systems using extensive metal duct work, and radiant ceiling wall or floor heating all necessarily have to be greatly simplified and reduced in cost if they are to survive in the south. Too large a portion of these installations that are being installed today cost more per heating month to amortize the equipment than the fuel costs for those same heating months. With some of these systems mentioned, the amortization costs per heating month is approximately three times the fuel cost for the six room home.

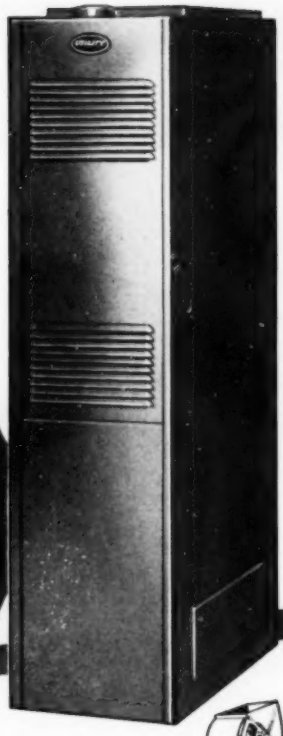
In government permanent barracks and similar Federal construction this overemphasis of heating is more pronounced than in local housing. Too often the specification for the heating design is the same for the Great Lakes territory as for the Gulf area, as witness the large number of military camps equipped and ready to furnish heat nine months of the year and with no cooling except the required number of specified air changes. Air change means little if it is not directed to cool the individual.

Bulk of population needs air conditioning

The migration toward the earth's poles has largely subsided. There are many more millions of people on this planet that are refugees from heat than from cold. Most of those who could benefit most by the discoveries on new ways of conquering the cold climate are behind an iron curtain. But the great mass of people on the face of the globe who need technical assistance on livability are in semi-tropical and tropical zones and are free men who need to know the procedures on how to keep cooler — not warmer.

The professional engineers and architects of the southern part of the United States have the best opportunity of any on this globe to give to millions of people of the world a new approach to tropical design based on a successful demonstration of how thirty or forty million blonde race people have learned to live high energy lives in the United States under tropical conditions that were considered only a few decades ago as unlivable for ambitious men of light skins. This is one of today's greatest untrodden field's of creative opportunity for men of design and structural ability.

IT'S A NATURAL!



UTILITY'S NE... 100FA

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Why gamble with ordinary heating equipment when you've got a *natural* winner with Utility's newly-developed 100FA Forced Air Furnace! The 100FA is the big brother of the sensationally successful Utility 70FA. And the 100FA should be just as popular with your customers for the same reasons: Extremely high heating performance (100,000 BTU input) at an unbelievably low price—luxury *forced* air heating for no more than ordinary installations. The 100FA will be popular with *you*, too, because its lower price lets you underbid competition profitably, lets you increase your net through lower installation costs and fewer costly call-backs. Send for FREE information today. Start pulling in the chips *now* on new and replacement sales with the easy-selling, profit-making Utility 100FA! AGA approved for zero clearance...uses only 19" x 25½" floor space.

DY-REKT® DRIVE BLOWER
—Constantly variable speed blower control permits correct air flow for any installation, without belts or pulleys.

SY-LENT® HEAT EXCHANGER
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Air Coolers

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CHASE® THRU-WALL FLASHING
AND CAP FLASHING RECEIVER

This new full-weight copper thru-wall flashing bonds in ALL directions. And the integral cap flashing receiver permits easy installation of cap flashing *after* the base-flashing and roof are installed. No plugs or wedges are needed to keep the receiver open.

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Send coupon for FREE folder which tells how you can save time and do a better job with this new flashing development.

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Ideal for Modern Basementless Homes

● The TORIDHEET model ORA-75 Hi-Boy combines all the qualities for the perfect ground floor installation. Check these sales-making advantages.

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The TORIDHEET Wall Flame burner used in the ORA-75 Hi-Boy is self-lubricating—has only one moving part.

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The TORIDHEET ORA-75 Hi-Boy's base dimensions are only 23 x 28 inches—easy to fit in even the smallest house plan.

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The ORA-75 Hi-Boy's famous TORIDHEET Wall-Flame burner has proved fuel savings of 25% to 50% over oil burners of other types.

Famous TORIDHEET Rotary Wall Flame burner used in model ORA-75 Hi-Boy burns catalytic oil with top efficiency.

...For Conversion jobs and in complete heating plants

Other Toridheet units for every need...every budget...Gun Burners...Gun Fired Boilers and Furnaces...Gas Conversion Burners and Gas Fired Furnaces

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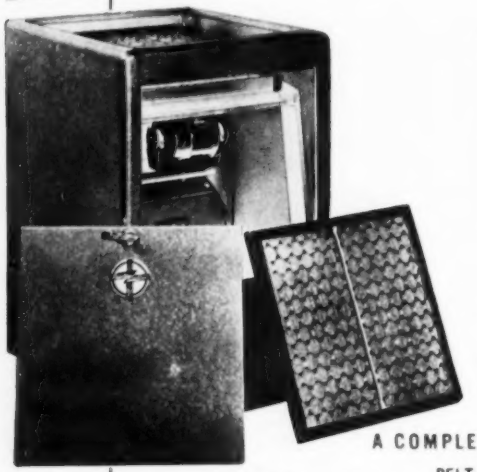
7318 Madison Avenue Cleveland 2, Ohio

Affiliated Canadian Manufacturers: Conroy Mfg. Company, Ltd., Catherine St., St. Catharines, Ont.

MAKE SOLID PROFITS...

install Peerless FANS AND BLOWERS

REDUCE COSTLY CALL BACKS!



•You protect your reputation and your pocketbook when you install Peerless fans and blowers in all heating and ventilating jobs.

Peerless equipment, since 1893, represents the highest degree of quality materials and precision workmanship, medium priced for your greater profit.

Peerless fans and blowers are fully guaranteed, and responsibility for your success is centered under one roof, where Peerless fans, blowers and motors are designed, built and assembled.

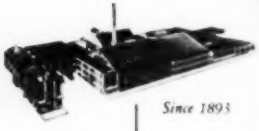
Follow the lead of thousands of dealer-contractors and many nationally known manufacturers of heating units . . . always specify Peerless!

Peerless Electric offers you prompt delivery and service through your favorite distributor. Write today for a complete list of prices and specifications.

A COMPLETE LINE FOR GUARANTEED PERFORMANCE

BLOWER-FILTER PACKAGE UNIT

Quiet, efficient, plus modern design! That's the story behind the handsome Peerless direct or belt drive blower-filter package units. Built of heavy-gauge metal with textured green enamel finish, these Peerless units are equipped with tight-fitting filter frame and large, removable access door.



Since 1893

BELT DRIVE UTILITY BLOWERS

Complete, ready to install unit, made with sturdy arc welded housings and frames with green baked enamel finish. Standard construction provides for dynamically balanced clockwise rotation and bottom horizontal discharge. Housings are convertible and may be turned for other discharges. Counter-clockwise blowers furnished whenever specified. Weatherproof drive covers are available for all sizes, 9 to 30-inch diameter.

WRITE FOR BULLETIN SDA-140

DIRECT DRIVE EXHAUST FANS

Slow speed, high volume fan assures quiet operation. Suitable for vertical and horizontal mountings. Only 4 lag screws needed to make clean, permanent installation. Furnished complete with single, two or three-speed controllers.

WRITE FOR BULLETIN SDA-130

DIRECT DRIVE UTILITY BLOWERS

Compact, easy-to-mount general utility blowers supplied in all sizes, 4 to 12-inch diameter, for ventilation and exhaust. Weatherproof covers that eliminate need for penthouse or other protection are available for all sizes. These Peerless blowers are equipped with resilient mounted long-lasting motors with current characteristics to suit any requirements.

WRITE FOR BULLETIN SDA-131

INDUSTRIAL EXHAUST FANS

Continuous duty exhaust fans for general industrial use and for use in ducts where low static pressure resistance is encountered. Fully enclosed, ball bearing motors are of single phase Capacitor—Induction type or three-phase Induction type, however, special motors may be supplied to fit any current characteristics. Every Peerless unit is registered and identified to allow maximum efficiency in servicing or ordering duplicates.

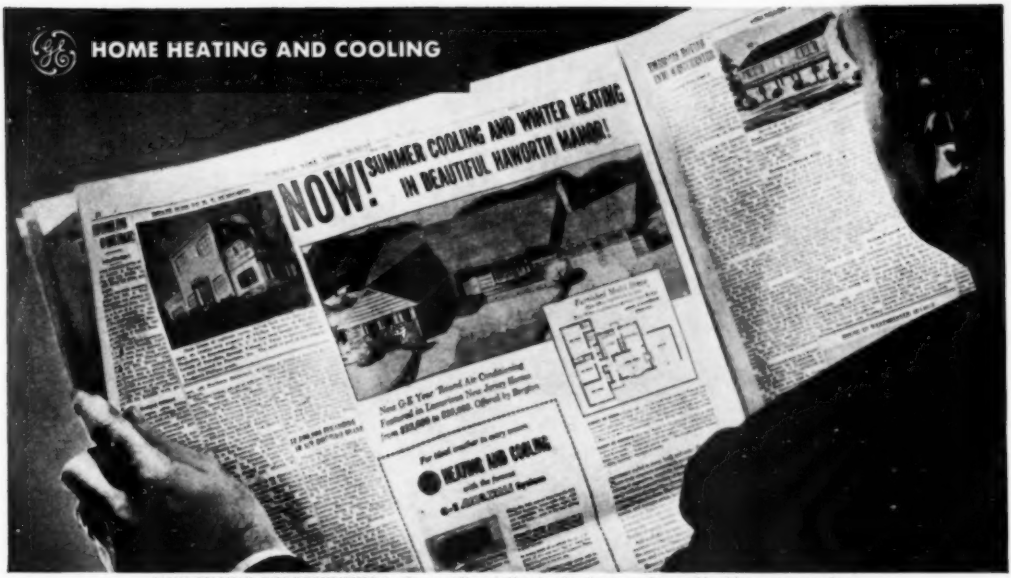
WRITE FOR BULLETIN SDA-141

THE PEERLESS ELECTRIC COMPANY

FAN AND BLOWER DIVISION

1405 West Market St., Warren, Ohio

Peerless Electric



NEW SELLING OPPORTUNITIES for General Electric Heating Dealers are evidenced by this newspaper advertisement of Builder James D'Agostino featuring G-E Home Heating and Cooling with the G-E *Air-Wall* System.

"Now G-E *AIR WALL* heating and cooling gives me the extras for more sales"

—Harry Rosenblatt, President, Controlaire, Inc., Fort Lee, N. J.

IN HAWORTH, NEW JERSEY, it was important industry news when sixty-five new homes, with G-E Year 'Round Air Conditioning, were offered. This is Builder James D'Agostino's answer to the demand of home buyers for complete indoor climate control every month of the year.

Dependable all-season comfort is delivered throughout each house by the famous G-E *Air-Wall* System, from the G-E Gas Furnace and G-E Residential Air Conditioner.

A G-E *LEADERSHIP FRANCHISE* PUTS YOU AHEAD

- **IN PRODUCTS:** Unique *Air-Wall* System; packaged home cooling; quick-comfort, fuel-thrifty gas and oil furnaces; outstanding quality at a fair price.
- **IN CONSUMER PREFERENCE:** Surveys prove the General Electric name enjoys tremendous public acceptance.
- **IN ADVERTISING:** Powerful national advertising aimed at consumers and builders, timely action-packed sales programs.
- **IN ORGANIZATION:** Experienced engineering, sales, and service assistance, and continuous up-to-date training programs.

A G-E *Leadership Franchise* is a lasting business asset. Write us today—there may be an opening in your area.

GENERAL ELECTRIC

MR. ROSENBLATT (right), G-E Home Heating and Cooling Distributor, stated "I had little trouble arousing Mr. D'Agostino's interest in the tremendous impact of G-E Home Heating and Cooling on home buyers."

General Electric Company, Section GH-23,
Air Conditioning Division, Bloomfield, New Jersey

Please tell me more about my business opportunities with a G-E *Leadership Franchise*.

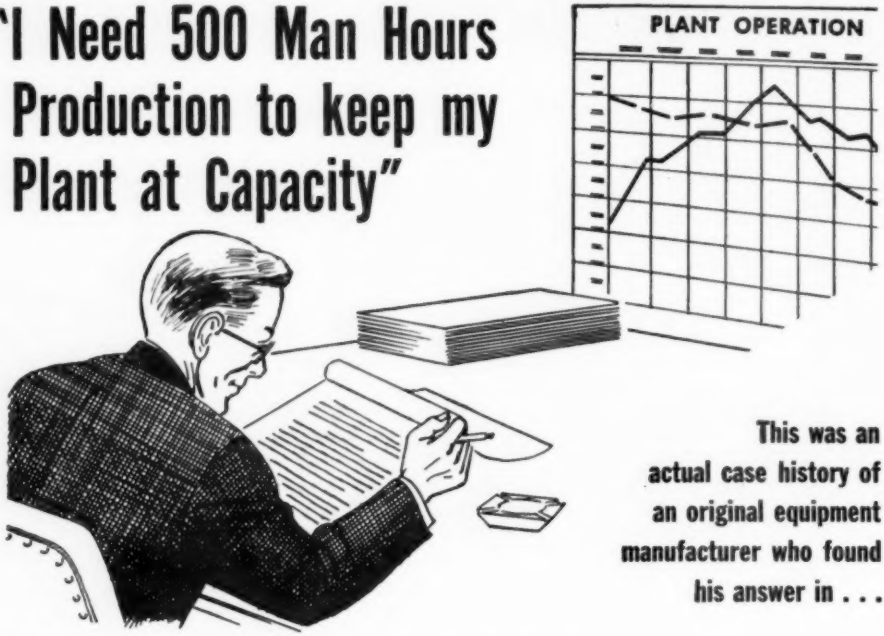
NAME .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

"I Need 500 Man Hours Production to keep my Plant at Capacity"



This was an actual case history of an original equipment manufacturer who found his answer in . . .

MORRISON PLAN for helping manufacturers Build their Own Blower Assemblies

This manufacturer was able to put 500 man hours a week in his sheet metal assembly shop by making his own blower assemblies . . .

. . . without any capital expenditures for new machinery because by the Morrison method, only standard sheet metal machinery is required.

. . . without any appropriation for special tools and dies, because Morrison furnish die formed parts to make blower assemblies at low cost.

. . . without any engineering work and layout because Morrison Engineers furnished him with complete engineering drawings.

. . . without breaking in and training a new labor force to new skill, because he was able to utilize the skills possessed by his present force in manufacturing furnaces.

. . . without adding additional overhead and supervising personnel because they were already available.

. . . without lengthy time lag because Morrison Engineers and production facilities were geared to assist him get started on this program.

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YORK
Radiaire
BASE-HEAT
A PRODUCT OF YORK-SHIPLEY INC.

The most modern system of warm air heating incorporating best features of —

- RADIANT HEATING
- PERIMETER HEATING
- FORCED WARM AIR

York Radiaire Base-Heat combines

- **LARGE RADIAIRE DISTRIBUTORS**

  Wide Radiaire distributors installed at the baseboard on the outside walls which distribute a warm blanket of air along the outside walls—blocking out cold air.

- **SMALL EASY-TO-INSTALL DUCTS**

  Small round ducts which can be tucked behind beams and between joists or buried in the concrete slab to give a clean, attractive installation.

- **PRICELESS QUALITY YORK-HEAT**

  The finest winter air conditioners built by automatic heating specialists, finished in white for attractive appearance, and built for peak heating efficiency with oil or gas.

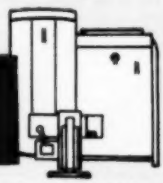
YORK HEAT

to Give YOU - the Dealer -

- **GREATER PROFITS**
- **EASIER INSTALLATION**
- **PROFITABLE BUILDER SALES**
- **NEW SALES OPPORTUNITIES**

Write Today to Dept. 7, York-Shipley, Inc., York, Pa. for complete details.

YORK HEAT



Oil and Gas-Fired Boiler Units. Winter Air Conditioners and Burners—Gas and Electric Water Heaters—Oil and/or Gas Fired Steampak Generators and Industrial Burners

EXCLUSIVE
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Twin Contacts

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enclosed contacts.

. . . you can control it with
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No matter what make, no matter what type.
For coal, gas or oil — this Perfex Magic Dial thermostat with the exclusive adjustable heater can be matched to any primary control with only one simple adjustment.

Saves time and trouble — eliminates necessity of selecting the proper heater — one thermostat takes care of any installation! It's exclusive with Perfex . . . the controls that give you the finest features, first!

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CONTROLS YOU CAN TRUST

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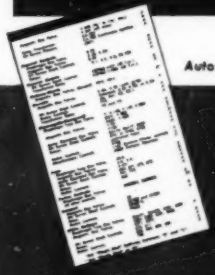
Automatic Heating Controls • Industrial Instruments • Industrial Engine Radiators • Color Process Printing



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Now Mueller Climatrol

answers your questions about small-pipe systems

Get this new manual — packed with facts on small-pipe systems for all types of homes

Here's one of the really hot subjects in the heating business. And Mueller has the answers you want.

Everything you need to do a profitable business in small-pipe systems (wide range of gas and oil units, plenum chambers, fittings, small pipes) is available as a complete *Muelleraire package.*

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Answers questions like these:

Where should you use the individual pipe system? The extended plenum system?

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How about warm-air outlets in crawl spaces?

How is the return air system designed?

And many others.

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It's low-cost comfort...it's easy to install...

COLEMAN *Blend-Air*® GIVES

Heating and Ventilating System—OIL · GAS · LP-GAS

THE 1-2-3 OF COLEMAN BLEND-AIR

New Low-cost Heating with the Magic Blender

1 A MAGIC BLENDER in every room blends room air with freshly heated furnace air *right in the wall*, then RE-circulates it for constant, even warmth. Controls individual room temperature; also provides over-all automatic thermostat control.

2 3½-INCH HEAT TUBES carry freshly heated air from furnace to Blenders. Easy to install—prefabricated—with adjustable sections to bend around obstacles. A wonderful advantage—saves time, makes every job easier.

3 BLEND-AIR FURNACE uses as little as 6 sq. ft. of floor space in basement, closet or utility room. Fresh air intake insures continuous supply of freshly heated filtered air through individual heat tubes. Simplified return air system.

This System Simplifies Every Installation

The installer's "dream" that's completely practical and low-cost with 100 per cent buyer acceptance from nation-wide Coleman performance and reputation. A pre-engineered installation delivered complete all at one time.

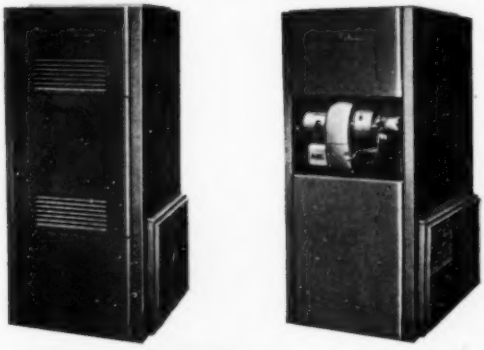
The most versatile equipment in heating history—quickest to put in, simplest to adjust to construction obstacles in any home old or new. So revolutionary in design, so clean in handling, so magic in results that other manufacturers have begun to copy it. But only Coleman designed Blend-Air—only Coleman makes it—only Coleman can guarantee your job its low-cost benefits.

Send coupon for complete information on the revolutionary system that will revolutionize your results. Nationally advertised, nationally approved. The Coleman Company, Inc., Wichita 1, Kansas.

it's a money-maker

YOU THIS TRIPLE VALUE

If it isn't COLEMAN, it isn't BLEND-AIR



5 NEW Furnaces give you wider heat range

3 New Gas Models

BTU INPUT:
75,000 100,000 and 125,000

2 New Oil Models

BTU OUTPUT:
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Factory-assembled, complete with nationally famous Coleman heat-making efficiency and automatic control systems. Quick and easy to install, complete in ONE package. AGA approved or listed with Underwriters' Laboratories.

Comfort costs so little with a

Coleman® Blend-Air
HEATING AND VENTILATING SYSTEM

AMERICA'S LEADER IN HOME HEATING

SEE OUR CATALOG IN SWEET'S

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Please send information on Coleman Blend-Air

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No matter how big or small your home, there's a Coleman to heat it better

BLEND-AIR BEATS ALL
—builders and users say

CHICAGO, ILL. "We found it to be the best heating system for our houses and it is, by far, doing a better job than the unit we previously used.... All our customers are very well satisfied."
—Fidelity Builders

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—Ed. J. Hemard, Jr.

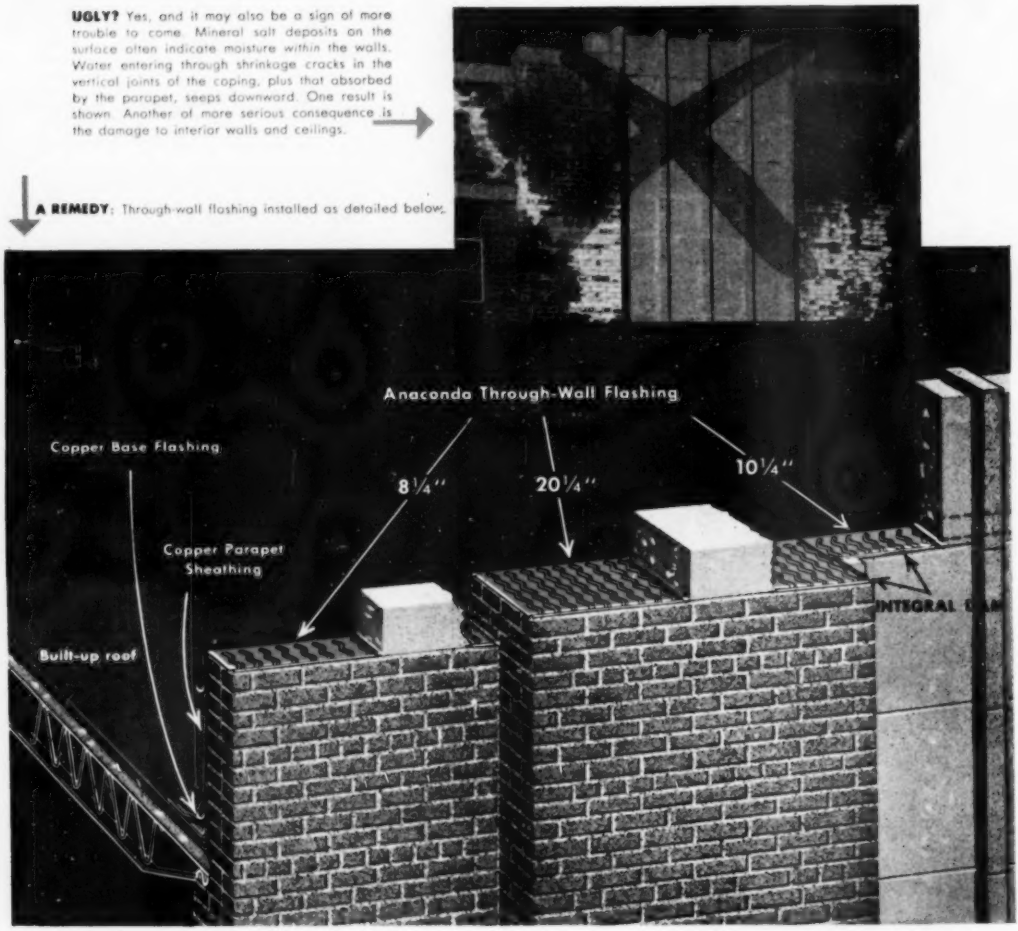
PORTLAND, ORE. "Blend-Air was the perfect answer and I am sure we now have a better heating job at a saving of about $225."
—L. L. Parsons

Use copper wisely

How to prevent "white stain" due to coping seepage

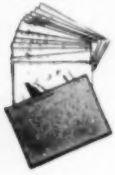
UGLY? Yes, and it may also be a sign of more trouble to come. Mineral salt deposits on the surface often indicate moisture *within* the walls. Water entering through shrinkage cracks in the vertical joints of the coping, plus that absorbed by the parapet, seeps downward. One result is shown. Another of more serious consequence is the damage to interior walls and ceilings.

A REMEDY: Through-wall flashing installed as detailed below.



ANACONDA Through-Wall Flashing does a better job. Its zigzag corrugations and preformed dam assure drainage in the right direction—toward the roof. The corrugations embedded in the mortar prevent lateral movement in any direction. The flat selvage bends without distortion to form a neat counter flashing.

Standard types for 8" and 12" walls are available. Special sizes may be ordered with variable widths of corrugations and selvages up to an over-all width of 47". One-piece corners for 8" and 12" walls are also standard. For complete information and suggested specifications—write for ANACONDA Publication C-28.



DETAILED DRAWINGS, such as this, of new or improved ways to apply sheet metal are yours absolutely FREE. Write for Portfolio S, The American Brass Company, Waterbury 20, Connecticut.

for better through-wall flashing—
use ANACONDA® copper

You can rely on RHEEM to promote sales to Builders!

THE BEST PUBLICATIONS

With ads run regularly in the best-read publications in the building field, Rheem talks directly to more than 200,000 builders, contractors and architects—the men who have the strongest influence in the choice of equipment for new homes—the men who represent potential sales for you.

THE BEST SALES STORY

Rheem ads point out the specific advantages that make Rheem Gas-Fired Heating Equipment the best buy for builders: the complete line, offering a different type of furnace for every type of construction . . . the proven quality and surprisingly low cost . . . plus the assurance that Rheem has the sales and service organization to back up its merchandise.

Through advertisements which reach every possible market, Rheem is helping you to develop sales to builders, increase your business, add to your profits.

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Manufacturing Plants in 22 Cities Around the World

When fully assembled, gas and power are connected. The pilot is lighted. The burners are fired. With a 48-point test, trained inspectors make certain that each furnace is ready to deliver the finest in trouble-free, warm-air comfort.

Windmaster
Draft Control
PATENTED

Any way you look at the Windmaster Draft Control, you will see ways to save time and money . . . and make more net profit on every sale.

Cost per square inch is less—Competitively priced with ordinary draft controls, the Windmaster vane has up to 100% more relief capacity. For example, an 8" Windmaster can do twice the work of an 8" size in other makes.

Costs less to stock and fill orders—Each Windmaster is individually packed in an attractive, sturdy carton with size plainly marked on all sides.

Costs less to install—The Windmaster can be properly installed in three minutes. Calibrated balance can be accurately set in less than 3 seconds.

Reduces service call-backs—Easy to install properly. Control locks into adapter in permanent position. Calibrated balance can be quickly locked at manufacturer's draft specification. Continuous trouble-free, extra-efficient action.

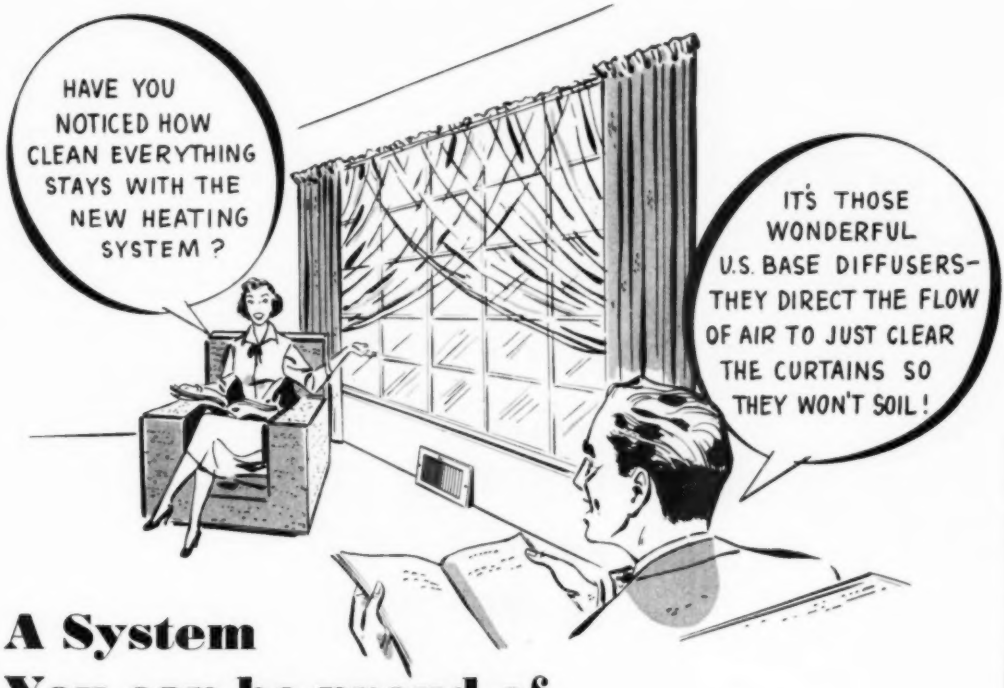
Dealer demand is growing—More and more wise dealers are switching to the Windmaster which cuts installation time and gives more net profit per job. At the same time, leading manufacturers are shipping Windmaster Draft Controls with their units.

Profitable advertising and sales helps—To give your sales volume a boost, a wide variety of advertising and merchandising helps are available . . . backed by an effective program of national advertising.

Send today for the complete profit story on the Windmaster Draft Control, sold exclusively through leading jobbers.

Windmaster Corporation 899 Ingleside Avenue • Columbus 8, Ohio

Windmaster Draft Control



A System You can be proud of

The No. 133-¾ U. S. PERIMETER DIFFUSER BASE REGISTER avoids cutting holes in that Costly Carpet or Rug. IT is not a Dust-Catcher. IT Spreads in Perfect Diffusion the Air Stream — Marvelously Blanketing the Large Glass and Outside Wall Surfaces with Comforting Warmth. IT overthrows the objections you encounter to Floor Diffusers. IT permits Job-Balancing at the Register. The No. 133-¾ Base Diffuser is adaptable to all types of Perimeter Systems and will be supplemented by a NEW LINE of Base Registers — No. 132 — For High Velocity Small Pipe Systems.

U. S. No. 133-¾ Perimeter Diffuser Base Register

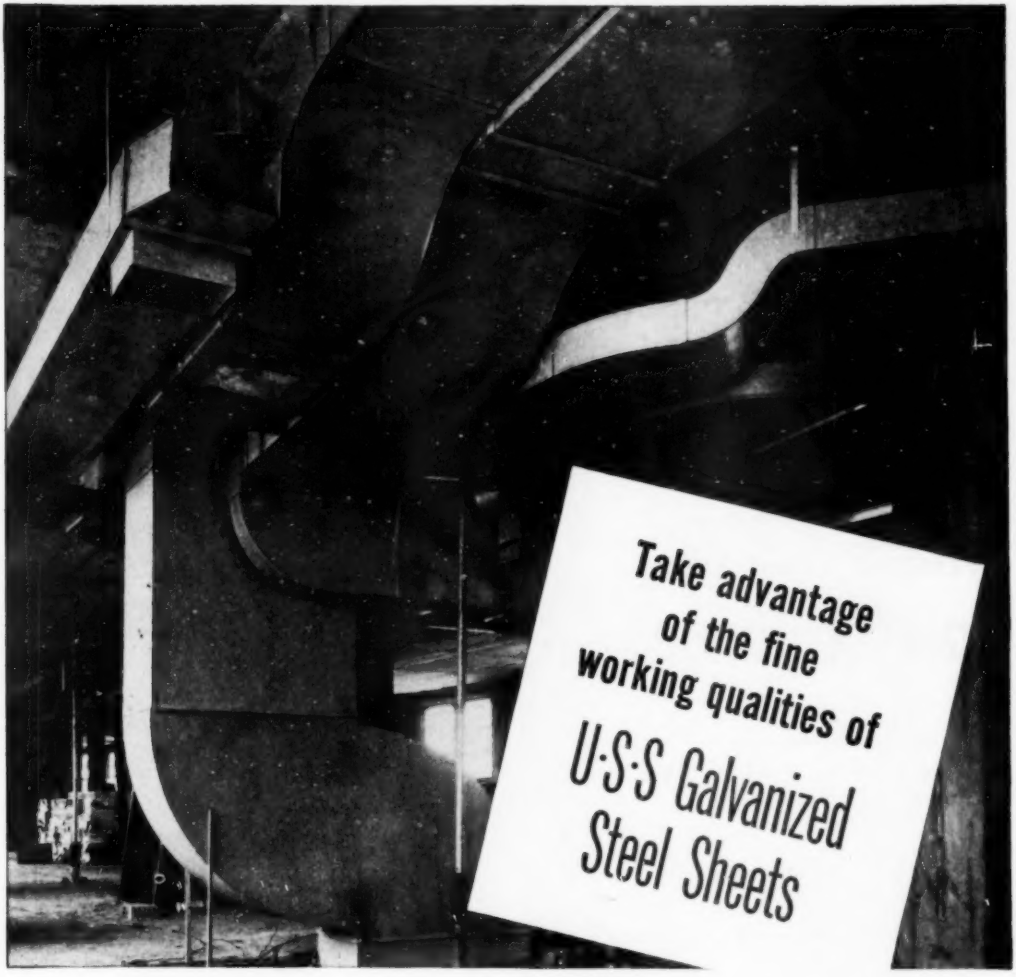
No. 410 Diffuser Floor Registers are now coming off U. S. production lines for immediate shipment.

UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

SOLD BY LEADING JOBBERS FROM COAST TO COAST



YOUR finest workmanship will go to waste unless it's combined with the highest quality material you can obtain. For ductwork installations, that means U·S·S Galvanized Steel Sheets.

True bends, tight seams and neat joints—all the characteristics of a top-notch job—are quick and simple with these quality sheets. Bending, rolling, cutting, stamping and soldering can be accomplished in minimum time with the most satisfactory results.

For finest performance—both in the fabricating shop and on the finished job—make it a point to use U·S·S Galvanized Steel Sheets. And tell your customers the brand you're using; they recognize that the U·S·S name stands for the best in steel.

U·S·S GALVANIZED STEEL SHEETS

UNITED STATES STEEL COMPANY, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

2-1287

UNITED STATES STEEL

"Seven years abuse—not a penny for repairs—that's SKIL performance!"

says **Sam Rosenthal,** of the
ROSENTHAL METAL CO.
Atlanta, Georgia

"We really put a tool through its paces," says Mr. Rosenthal. "All our work is sheet metal fabrication. Much of it made to order, like this job of fitting out U.S.A.A.F. mobile canteen trucks. This means drilling in steel—*constantly!*

"For seven years, day after day, we've given this ½-inch SKIL Drill real punishment, sometimes beyond normal capacity. Yet, in all that time," he concludes, "we've never spent a *cent* on repairs. You can't beat *that* kind of quality in a drill."

SKIL Drill—Model 283

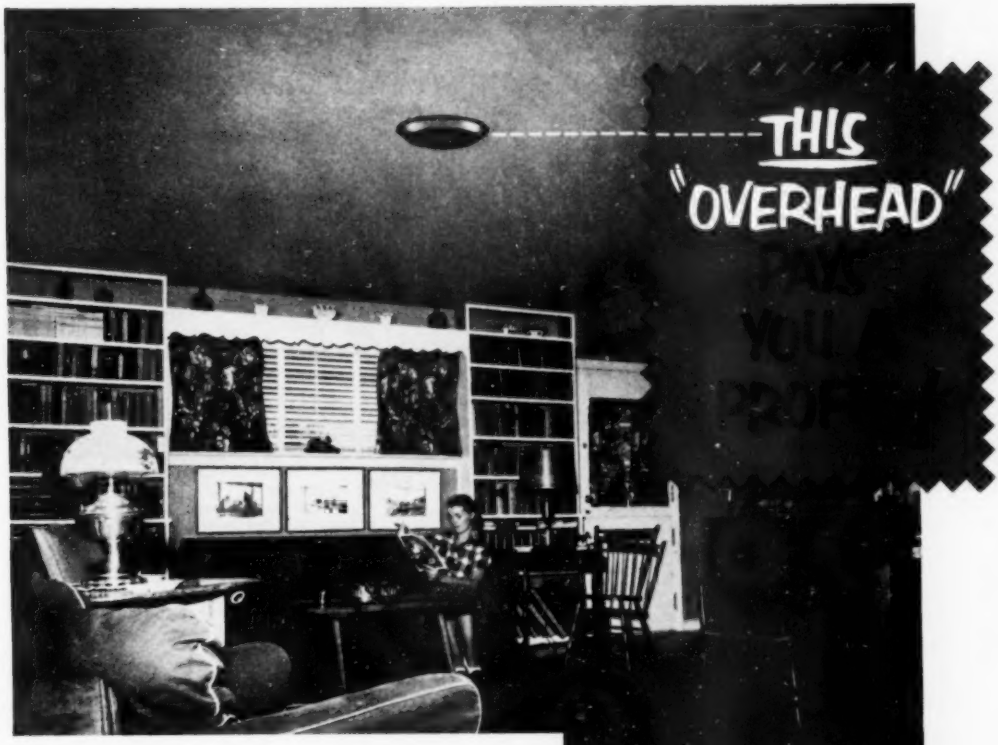
Heavy duty ½" drill. Capacity in steel: 0" to ½". Capacity in hardwood: 0" to 1½". No-load speed: 550 r.p.m. standard. 1000 r.p.m. at extra cost. Full-load speed: 360 r.p.m. standard. Bearings: Ball bearings on armature, intermediate shaft and chuck spindle. Length overall: 15". Net weight: 13 lbs.

SKIL Products are made only by SKILSAW, INC.
5033 Elston Ave., Chicago 30, Illinois

SKILSAW Factory Branches in 34 Principal Cities
In Canada: Skiltools, Ltd., 3601 Dundas Street West, Toronto 9, Ontario

SKIL
PORTABLE TOOLS

See your Distributor for complete information or call your nearest SKILSAW factory branch



It's the "kno-draft method" of residential warm air heating

● Overhead air diffusers have been used by business and industry for years. Now, Kno-Draft has adapted them to home use; and the "Kno-Draft Method" of residential warm air heating is a best seller everywhere contractors use it. It does a *so much better* job of *even heating* that one installation sells another. Business snowballs.

Kno-Draft Ceiling Air Diffusers are easy to figure, easy to install. You save time and labor. Your overall costs are frequently less than for conventional grille and duct work. You make a better profit.

On the homeowner's side, the advantages of the "Kno-Draft Method" are: more even heat, absence of drafts and blasts of hot air, clean operation, complete freedom in furniture arrangement, fuel savings.

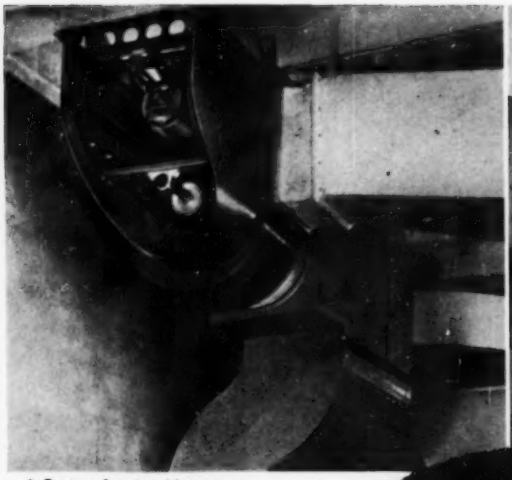
Cash in on the skyrocketing popularity of this newest advance in heating. Just mail the coupon today and we'll rush the complete Kno-Draft story to you. W. B. Connor Engineering Corp., Danbury, Conn.

kno·draft
adjustable air diffusers

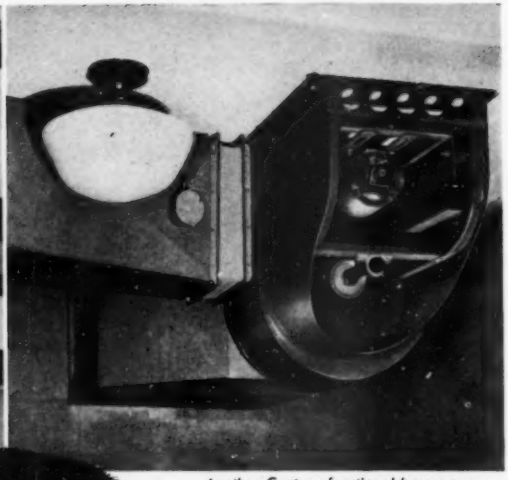
W. B. CONNOR ENGINEERING CORP.
Dept. I-72, Danbury, Connecticut

Please send me full details about the "Kno-Draft Method" of residential forced warm air heating.

Name .....
Position .....
Company .....
Street .....
City ..... **Zone** ..... **State** .....



A Century fractional horsepower motor on an overhead blower in a National Guard Armory used to exhaust air from the firing line of rifle range.



Another Century fractional horsepower motor used on an overhead blower in the same Armory to exhaust air from a ticket office and men's wash room.

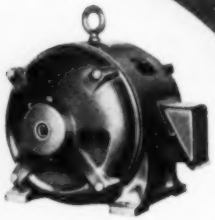
Are Widely Used On Air Moving Equipment..

...To Assure Unusual Freedom From Vibration and Quiet Operation

Century motors are widely used on furnace blowers—ventilating systems—attic fans—unit heaters—unit coolers and many other forms of air moving equipment.

These features make Century motors ideal for your use: They start and run smoothly and quietly . . . Sturdy construction means long life . . . Insulation resists dampness . . . Modern appearance blends with equipment . . . An Authorized Century Service Station is near to give you fast service.

These typical examples show how Century motors are applied to help you get all the performance that is built into the equipment they drive.



Century manufactures a wide line of single phase and polyphase, as well as D.C. motors. Sizes range from ⅛ to 400 h.p. A variety of types each with many different specifications make it easy to choose the right motor to give the best results.

Specify Century Motors for Top Performance of the equipment you buy or for replacement.

Century C MOTORS

739

CENTURY ELECTRIC COMPANY • 1806 Pine Street, St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

"Sunny – it's cold outside..."

MOR-SUN
WARM AIR FURNACES
Forced Air and Gravity
for Gas and Oil

Speak of the Devil . . .

Allow me to introduce myself . . . I am a visiting expert on—ah—space heating . . . dropped in to look over this MOR-SUN.

Word gets around, you know.

If you'll excuse the expression — What the devil do you want with a MOR-SUN . . . I mean, considering where you're from?

Purely an urge to modernize, my boy —what with all the coal strikes, stokers' union and what have you . . . Primarily, I'm interested in B.T.U.'s — real heat!

Then your best bet's a MOR-SUN! Its heat exchanger gives out-of-this-world efficiency . . . no other heat exchanger produces as much heat from a given unit of fuel!

It sounds dreadfully expensive, and we haven't much of the long green . . . you know — that stuff about not being able to take it with you? It's so true!

Lucky Devil! You came to the right man . . . The MOR-SUN is as inexpensive to buy as it is to operate! That's because it's MASS PRODUCED! . . . a product of the same assembly-line production as today's automobile!

It also adds Beauty to your — er — Basement ... but I don't suppose you're interested in that.

Ah, it is beautiful! But tell me—will it stand the gaff?

It's all 12-gauge steel! . . . a wholly post-war product of the latest techniques in die stamping!

I'm sold! Now you're in an unusual position . . . you'll have to tell the Devil where to go!

There are Morrison representatives all over the country, sir, or you can write to Morrison Steel Products directly!

Thank you, son. Look me up if you ever go to . . . er, g'bye . . . I hope.

MOR-SUN
WELDED STEEL FURNACES

"The Sun Never Sets with Mor-Sun"

MORRISON

STEEL PRODUCTS, INC. • BUFFALO 7, N. Y.

COMPARISON TEST PROVES

Kaustine

SAVES HEATING DOLLARS!

SIDE BY SIDE records were kept by Mr. Lester A. Sharrier of the Anchor Sheet Metal Works of Crawford, N. J., during a comparison test between a number of Kaustine Oil Fired Furnaces and the nationally advertised units of other furnace manufacturers.

The test, made in the same tract of homes over a period of two years, showed an oil consumption cost averaging between $90.00 and $100.00 a year on the Kaustine units as compared with $120.00 to $135.00 for the other equipment.

Mr. Sharrier also says "... we have had less service trouble with your units than any of the others we have ever installed ... and we believe your burner and furnace to be one of the finest on the market."

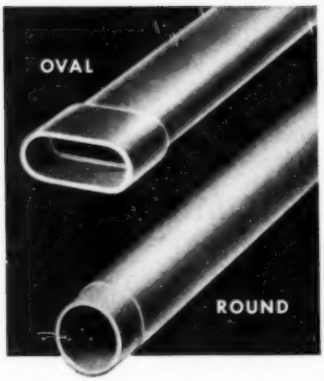
Write for full information to Dept. A-7.

Kaustine FOR SAVINGS

Modulated Warm Air Furnaces from 65,000 to 270,000 B.T.U.
Septic Tanks ... Pressure Vessels ... Oil and Gasoline Storage Tanks ... Truck Tanks ... Custom Built Fabricated Equipment

"Did you say 60,000,000 ft.?"

"No . . . I said 65,000,000 ft. of Transite Flue Pipe now in service!"



IF YOU WANT TO KNOW the reasons why Transite Flue Pipe is such a nationwide favorite, ask the men who install it!

They like the way this easy-to-handle asbestos-cement pipe saves time – and headaches – on the job. No crimping, no hole punching, no special tools needed here . . . no bolts or nuts for making joints.

They swear by – not at – the tapered couplings that require only a drive fit to assure quick, positive alignment.

They like Transite's *complete* line of fittings, too – because they provide the answer to any job requirement . . . make it easy to follow good venting practice.

And they've learned from experience that this is one flue pipe that won't deform, dent or bend out of shape. They specially like the firm, solid, rigid type of installation they know they can count on with Transite Flue Pipe – every time!

Once you've tried Transite Flue Pipe, you too, will be sold on its many practical advantages that mean more profitable gas venting jobs for you – and long term satisfaction for your customers. For further details, write Johns-Manville, Box 290, New York 16, N. Y.

Transite Flue Pipe is the only flue pipe for gas appliances listed by Underwriters' Laboratories that has been continuously approved since 1932.

Johns-Manville TRANSITE FLUE PIPE

FOR VENTING DOMESTIC GAS-BURNING APPLIANCES

Remember when...

Refrigeration meant a cake of ice?

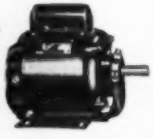
Perhaps those were the "good old days" . . . but who would trade the refrigerator found in today's average American home for an old-fashioned ice-box?

Electrical home appliances have eliminated countless chores for modern housewives. Today's refrigerator, for example, requires practically no attention—because it can be powered by an Emerson-Electric hermetic motor. True to a 62-year tradition of precision manufacture, each Emerson-Electric hermetic motor is carefully built, tested, and sealed for shipment, under accurately controlled atmospheric conditions.

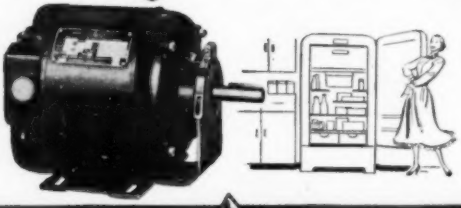
In addition to hermetic motors in horsepower ratings from ⅛ to 15, Emerson-Electric offers a complete line of standard motors from 1/20 to 5 h.p. for use on equipment for the home, the farm, in business and industry. Your inquiry is invited. THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Mo.

MODERN LIVING IS POWERED WITH ELECTRIC MOTORS

EMERSON-ELECTRIC MOTORS
For Belted Fans and Blowers



These motors incorporate all the electrical and mechanical specifications best suited for this service. Split-phase motors, available in 1/6, ¼ and ⅓ h.p., with resilient mountings and automatic reset thermal protectors. For complete data write for Motor Bulletin No. M122.



EMERSON ELECTRIC
MOTORS • FANS **APPLIANCES**

LEADERS IN THE FAN AND MOTOR INDUSTRY SINCE 1890

Another First by Webster Electric...

the 6000 Series Fuel-unit ... with new improved cut-off

In keeping with Webster Electric's tireless efforts in developing ever-improved products, the new 6000 Series Fuel-unit is designed and built to assure even longer life, more trouble-free performance!

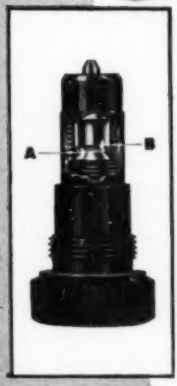
Years of engineering study, tests of every modern type of valve materials, many field applications, and full knowledge of the problems of the oil-heating industry have enabled Webster Electric engineers to give you an outstanding improvement in valve cut-off construction.

Operating heart of this new 6000 Series, available in both single and two-stage units, is a new crown-shaped stainless steel valve seat and a specially designed valve containing a plastic disc of new, modern material. Both valve and disc materials provide immunity to deterioration beyond all normal operating conditions.

And think of this ... the new valve assembly is interchangeable in all Webster Electric Fuel-units sold in the past sixteen years! Where else can you get such practical engineering design?

Specify this sensational new Webster Electric 6000 Series Fuel-unit, as well as a Webster Electric Ignition Transformer, on the next order to your heating equipment manufacturer. Ask your Webster Electric Authorized Service Station or your Heating Wholesaler to include them in your next dealer service package.

Similar units are made for sale in Canada by Canadian Acme Screw & Gear, Ltd. of Toronto, under license by Webster Electric Company, Racine, Wis. Established 1909.



New Webster Electric Valve Assembly

Here's the new valve assembly which performs so sensationally in the new Webster Electric 6000 Series Fuel-unit ... a valve which can be installed in any Webster Electric Fuel-units sold in the past sixteen years!

This shows (A) the new crown-shaped, stainless steel valve seat which is impervious to acids and (B) the specially designed plastic valve disc which has little or no cold flow, has utmost resistance to distortion and deterioration under all operating conditions. The assembly is designed to give even greater pressures between the mating parts—seats more tightly after millions of operations.

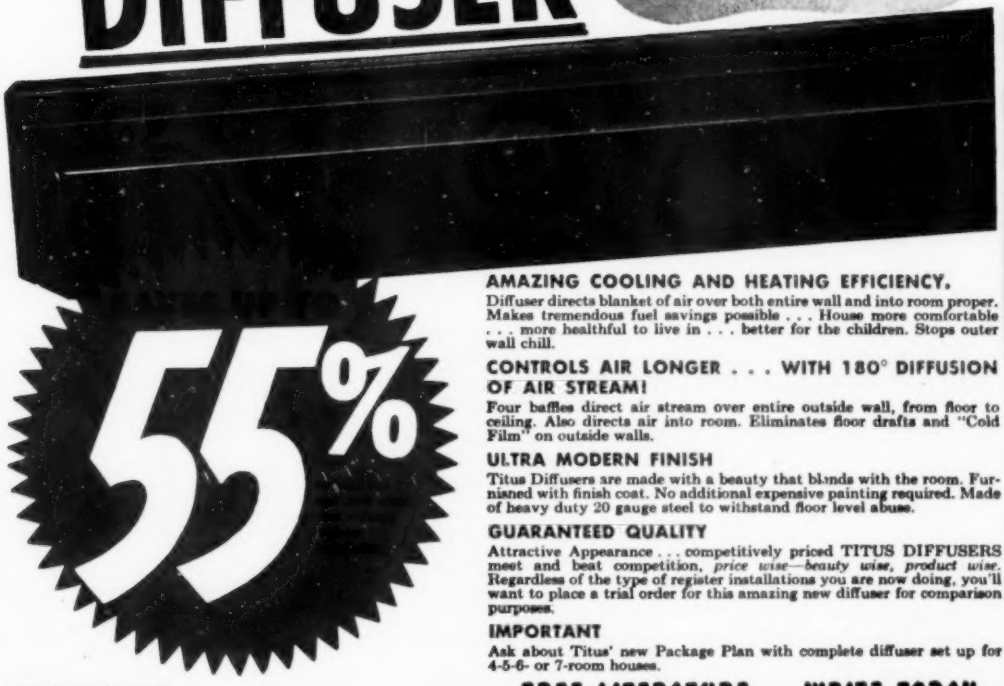
WEBSTER ELECTRIC

RACINE • WISCONSIN

"Where Quality is a Responsibility and Fair Dealing an Obligation"

FOR PERIMETER HEATING & COOLING

NEW NO. 100 TITUS PERIMETER DIFFUSER



55%

KEEPS BIDS LOW

Here's the *NEWEST MOST REVOLUTIONARY ADVANCE IN AIR DIFFUSER INSTALLATION.* There is simply no comparison between TITUS PERIMETER DIFFUSERS and ordinary registers. TITUS DIFFUSERS install *so quickly, so easily,* and with *such drastic cuts in labor and material* you cannot afford to use old styles. These diffusers require about ½ the duct work, and much less than ½ the labor of ordinary installations. Once your men install TITUS PERIMETER DIFFUSERS, cost comparisons will *positively prove* these amazing labor and product economies.

ELIMINATES OLD SLOW INSTALLATION METHODS

No roughing-in necessary. Diffuser slips easily onto boot. There is no cutting into wall or plaster.

CAN BE INSTALLED WITH EQUAL EASE IN OLD OR NEW BUILDINGS

AMAZING COOLING AND HEATING EFFICIENCY.

Diffuser directs blanket of air over both entire wall and into room proper. Makes tremendous fuel savings possible . . . House more comfortable . . . more healthful to live in . . . better for the children. Stops outer wall chill.

CONTROLS AIR LONGER . . . WITH 180° DIFFUSION OF AIR STREAM!

Four baffles direct air stream over entire outside wall, from floor to ceiling. Also directs air into room. Eliminates floor drafts and "Cold Film" on outside walls.

ULTRA MODERN FINISH

Titus Diffusers are made with a beauty that blends with the room. Furnished with finish coat. No additional expensive painting required. Made of heavy duty 20 gauge steel to withstand floor level abuse.

GUARANTEED QUALITY

Attractive Appearance . . . competitively priced TITUS DIFFUSERS meet and beat competition, *price wise—beauty wise, product wise.* Regardless of the type of register installations you are now doing, you'll want to place a trial order for this amazing new diffuser for comparison purposes.

IMPORTANT

Ask about Titus' new Package Plan with complete diffuser set up for 4-5-6- or 7-room houses.

FREE LITERATURE . . . WRITE TODAY

TITUS INCORPORATED · WATERLOO, IOWA

Gentlemen: Rush me complete information on this amazing new Perimeter Diffuser #100 . . . plus checked items!

- ☐ RETURN AIR GRILLES
- ☐ ENGINEERING DATA
- ☐ PKG. PLAN FOR 4 ROOM HOUSE
- ☐ PKG. PLAN FOR 5 ROOM HOUSE
- ☐ PKG. PLAN FOR 6 ROOM HOUSE
- ☐ PKG. PLAN FOR 7 ROOM HOUSE

Firm Name:_____

Address:_____

City:_____ State_____

By_____

AVAILABLE FOR IMMEDIATE DELIVERY

"Here's the ultimate in year 'round conditioning...with independent humidity control"

says S. H. Baldwin,

S. H. Baldwin and Company, Lubbock, Texas

"Recommending all-weather conditioning to a homeowner is like selling a man a Cadillac. While thousands will buy, all have to be sold on the *extra* values. That's where the Bryant All-Weather Conditioner fits into the picture! Not only does it control the temperature, but *closely* controls the *humidity*, too . . . a brand new development in residential air conditioning. With the Bryant it's even possible to *remove excess moisture* from the air *without lowering room temperature*. Completely automatic, the All-Weather Conditioner heats, humidifies, cleans and gently circulates the air when warmth is needed; also cools, dehumidifies (then reheats, if necessary) the air for summer comfort. Independent, automatic humidity control takes the Bryant out of the "me too" class of year 'round conditioning. Naturally, many other features have made Bryant tops in the field. If you want the *ultimate* in year 'round conditioning, get acquainted with the Bryant All-Weather Conditioner. Your Bryant distributor has the facts, or write Bryant Heater Division, Dept. 15, Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland, O.

BRYANT
ALL-WEATHER
CONDITIONER

Sizes 3- and 5-ton cooling capacity. Total heating input 150,000 BTU/Hr. in the smaller model, 200,000 in the larger size. Units available for electrical power from 208 to 230 volts, 1 or 3 phase 50 to 60 cycles. AGA approved and Underwriters' listed.

bryant® *best buy*

IN HEATING,
AIR CONDITIONING,
WATER HEATING

EXTRA NIAGARA NEWS EXTRA

ADJUSTABLE NIAGARA BAR FOLDER

FEATURES SPIRAL SPRING COUNTERBALANCE

Available in 21, 30, 36 and 42" working lengths. Capacity 20 gage mild steel. Small 21" length not furnished with counterbalance.

COMPACT DESIGN FOR SHOP AND ON-THE-JOB USE

Simple and efficient self-contained spiral spring counterbalance, designed to minimize operator fatigue, does not use any additional bench space.

Clamping and folding in one motion of the operating handle affords accuracy and high production.

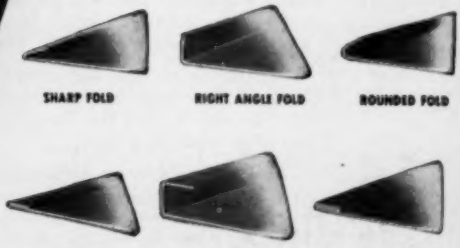
Adjustable for narrow or wide folds and desired angle of bend.

Adjustable for sharp bends or rounded bends as required for wiring.

Designed for right or left-handed operators.

Write for Bulletin 74-A

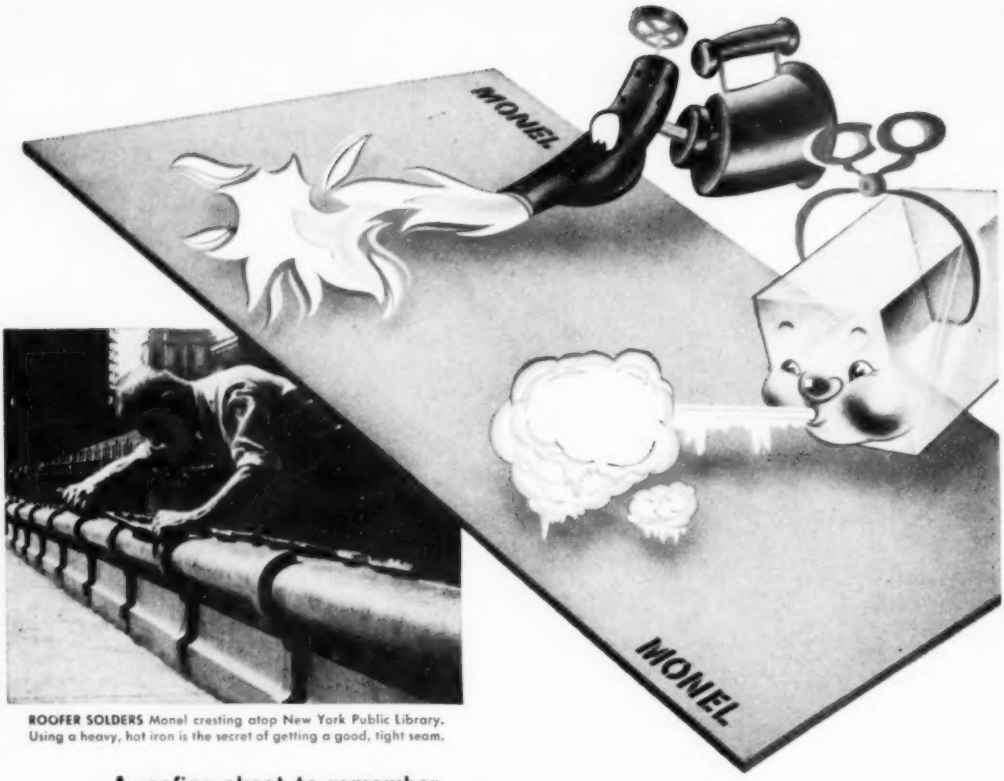
SPEEDS UP AND CUTS COSTS OF FOLDING AND HEMMING



NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.

Manufacturers of America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work

DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK



ROOFER SOLDERS Monel cresting atop New York Public Library. Using a heavy, hot iron is the secret of getting a good, tight seam.

A roofing sheet to remember...

because it stands firm against heat and cold!

Let the weather do its worst! Monel® roofs give your customers the long, trouble-free service they look for.

Because of its low coefficient of expansion, Monel stands firm against strain and flexure. There's less creeping and buckling – and no cracking.

Monel is trouble-free *before* installation, too! The sheets have a special soft temper. They are easily sheared or nibbled. They can be readily handled by brakes and other tools.

With Monel, you do neat soldering by 1) pre-tinning the sheets in your shop and 2) using heavy irons (kept good and *hot!*) for installation. That way, you get strong, tight seams in jig time.

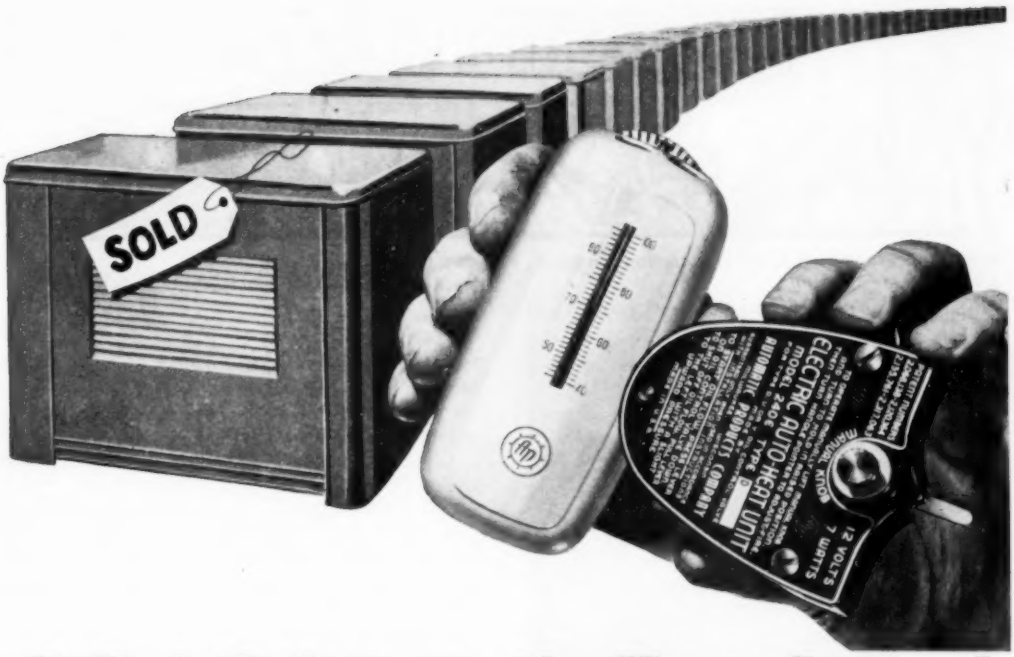
Right now – because the defense program has created so much demand for nickel alloys – the Government has stopped the use of Monel for building purposes.

But there's nothing to stop you from getting information about this quality roofing metal. Write for your free copy of "Monel Roofing Offers Strength, Durability, Long Life," an article which originally appeared in this magazine. You'll find it packed with ideas–and well worth saving until Monel Roofing Sheet again becomes available.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

INCO TRADE MARK

MONEL ..."*For the Life of the Building*"



Sell A-P Automatic Heat Control with all your space heaters for satisfied customers–extra profits

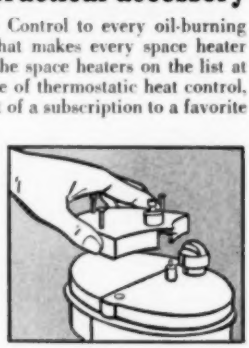
What brand do you sell?

ALLEN'S	INTERNATIONAL
BARNES	JUNGERS
BENNER-NAWMAN	KEMAC *(Canada)*
BEYER	KLEER-KLEEN
COLE HOT BLAST	LACO
COLEMAN	LONERGAN
COLEMAN *(Canada)*	MAGIC CHEF
CREST *(Canada)*	MARCHAND *(Canada)*
CREST-AIRE *(Canada)*	MONARCH
CUSTOM AIRE	MONARCH *(Canada)*
DOMESTIC	MONOGRAM
DRACO FIREBALL	NESCO
DUO-THERM	NORGE HEAT
ENTERPRISE	ORAN
ENTERPRISE*(Canada)*	PERFECTION
ESTATE HEATROLA	PREWAY
EVANS	QUAKER
EVEN-TEMP	QUAKER *(Canada)*
FAWCETT TORRID-OIL*(Canada)*	SAFEWAY
	SCOTSMAN
FESS*(Canada)*	SIEGLER
FINDLAY *(Canada)*	SILENT FLAME
FLOOR-O-LATOR	SUPERFLAME
FLORENCE	THARRINGTON
GILLEN	THERMO-PRODUCTS
H. C. LITTLE	TORRIDAIRE
HERCO HEAT FLO *(Canada)*	VIKIMATIC
	WASHINGTON FRUGAL

Give your customers "dial control" plus economical heating–with this practical accessory

You profit *twice* when you add an A-P Comfort Control to every oil-burning space heater sale. It's an easy-selling accessory that makes every space heater customer a *satisfied* customer. If you sell any of the space heaters on the list at the left, you can offer the comfort and convenience of thermostatic heat control, *plus* fuel-saving economies . . . for less than the cost of a subscription to a favorite newspaper.

It's so easy to install, you can pocket the added profit without the worry of service problems. Start cashing in today with this *Extra-Profit* builder. *Show it, demonstrate it . . . and you'll sell it.*



Easy to install

Changeover to automatic heat is simple with the A-P Comfort Control. Furnished complete with conversion electric top, thermostat and plug-in transformer. Choice of electric or mechanical type — for all popular oil-fired space heaters.

A-P CONTROLS CORPORATION

(formerly Automatic Products Company)

2152 N. 32nd St., Milwaukee 45, Wis. • In Canada: A-P Controls Corp. Ltd., Cooksville, Ont.

The Kalamazoo Sheet Metal Association conducts a Super Sales meeting

Realizing that summer is the time for starting a sales campaign, the Kalamazoo Sheet Metal, Roofing, Heating and Air Conditioning Contractor's Association, called their June meeting with Sales as the theme. The contractor members brought their salesmen and all other personnel who have contact with the buying public. A sales success story film with sound, entitled "The Beettinger Story" was shown and followed by a pep talk on how to make the sales and where to look for them. The speaker, C. C. Whitcomb, has experienced all of the items outlined by his talk and many of the contractors who heard him were able to plan their summer sales program all the better for having attended the meeting.

NWAH&ACA represents 85% of all central heating production

The Membership Committee of the National Warm Air Heating and Air Conditioning Association at a recent meeting talked about the coverage of producing firms in the central heating field and realized that 85% were active members. It is planned to extend invitations to all non-members representing various segments of the industry to become associated with the National Association.

The Membership Committee unanimously approved that manufacturers agents be admitted to the association on the basis of annual dues of $25.00. This will be taken under advisement by the Board of Trustees and their action reported in the next issue.

City Codes Discussed at Rocky Mountain Gas Association Banquet

Since January 1944, under the guidance of C. M. Musick, first president of the Rocky Mountain Gas Association, there has been a continued development of a code for the City of Denver to cover the installation of gas equipment for heating and ventilating. The success of this venture was announced at the recent banquet by J. L. Antonio, Chief of Mechanical Division, City and County of Denver. He stated that by the end of 1952 the Denver Building Department will have enacted and printed an entirely new and up-to-date set of codes that will give Denver citizens adequate protection and at the same time put a minimum of restrictions upon the operations of the members of the gas industry.

A particular concern of the Rocky Mountain Gas Association was to have recognition given to the problems of the proper combustion of natural gas at Denver's altitude of one mile above sea level. This was satisfactorily worked out between all parties interested through the data obtained by Mr. Antonio.

593 attend Canadian Warm Air Schools

A new record for attendance of the National Warm Air Heating and Air Conditioning Association, Canadian Chapter's training program was achieved this year. During the 1951 program 569 enthusiastic students of warm air attended the intensive training schedule and in 1952 many of them came back for more and brought their co-workers with them. This year there were 593 who wanted to know about the latest procedures of the warm

Recent banquet of Rocky Mountain Gas Association in Denver.

air field. Next year's school will bring many new subjects and some data on the small pipe systems now gaining in popularity throughout the States.

Rochester Association Relaxes

After playing hosts to the members of the Sheet Metal Contractors National Association, their guests and ladies, the Master Sheet Metal, Furnace and Roofer Association of Rochester decided to take time off for a little fun of their own. On June 9th, they held their monthly meeting at the Ontario Country Club where Les Wilson arranged the Scotch Foursomes Golf Tourney. The results of this event have been kept secret, probably at the request of the modest.

Lake County Association leads in Indiana

With full membership in both State and National Association, the Lake County Sheet Metal Contractors Association is leading the other local associations in active group participation on state and national problems. The Muncie contractors are a close second.

The Sheet Metal and Warm Air Heating Contractor's Association of Indiana has for a slogan this brief but effective message "A State Membership Certificate Builds Confidence."

Slogan for CHS of Milwaukee

Paraphrasing the paint industry's slogan, "Save the Surface and You Save All," Frank A. Ernst, executive secretary of Coal Heating Service of Milwaukee, Inc., has given his group's membership a new version, "Save the Service and You Save All."

In his current membership bulletin, Ernst says: "The retailer who spends time thinking of how he can provide better service with the product he sells and puts his findings into action is the retailer who keeps old customers and adds new ones each passing year. Think of your purchases in the past month and answer the question, why did I buy where I did? Isn't it true that the price of many articles we buy is the same in tens, and, yes, even in hundreds of retail firms? Yet we buy from the same store year in and year out. If the price is the same then there must be another reason we patronize the same firm. Whatever it may be, it can be listed under the general heading of service. The conclusion one arrives at is that service and not price is the reason people buy where they do. It then becomes necessary for each of us to decide how we can better service the customer so that we can keep old friends and gain new ones as well."

Los Angeles graduates sixty-two

The Institute of Gas Heating Industries' 1952 class in Sales Training and Engineering received their Certificates of Achievement at the monthly meeting held June 12th. The 1952 material was prepared and presented by R. M. Johnson, I. M. Remen, Gordon Payne, Basil Sugden, Reggie Hesling, J. W. Burke, Gordon Oury, Don Will, Tom Pinatelli, C. A. Green, Paul Polson.

Arthur Hess A.S.H.&V.E. was guest speaker at the May meeting where he moderated a panel forum consisting of Leo Hungerford, H. F. Haldeman, Basil Sugden, Jack Tangeman and William Fuller. He presented a short talk on "Evaporative Cooling" in which he pointed out that evaporative cooling is the oldest form of cooling known to man. The human body employs this method whereby the basic temperature is maintained by the evaporation of perspiration from the surface of the skin. To use evaporative cooling for air conditioning requires a great many air changes an hour. It is not recommended that this method of cooling be tied in with the warm air heating plant due to its tendency to corrode the furnace and duct system.

Gas Heating Dealers Association of Alabama elects new officers

Seated: (left to right) Charles Black, president; Landis Williams, vice president; Robert Beason, secretary-treasurer
Standing: J. W. Little, George Hughes, Arthur Hanlin; directors

Coming Events

Oct. 27-31 — American Gas Association, Annual Convention and Gas Appliance Exposition. Auditorium, Atlantic City, N. J. H. Carl Wolf, Managing Director, 420 Lexington Ave., New York, N. Y.

Dec. 3-4 — National Warm Air Heating and Air Conditioning Association 39th Annual Convention. Sheraton-Gibson Hotel, Cincinnati, Ohio. George Boeddener, Managing Director, 145 Public Sq., Cleveland, Ohio.

Jan. 26-30, 1953 — 11th International Heating & Ventilating Exposition (The Air Conditioning Exposition). International Amphitheatre, Chicago. Address inquiries to the exposition management, International Exposition Co., Inc., Grand Central Palace, New York 17, N.Y.

Jan. 26-28, 1953 — National Heating Wholesalers Association, Inc. Annual Meeting. Congress Hotel, Chicago, Ill. E. L. Wyman, Executive Secretary, 637 Union Commerce Building, Cleveland 14, Ohio.

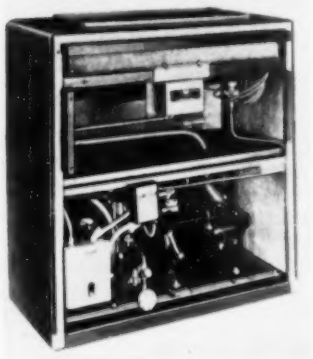
EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For new literature giving product information which is available, see page 140.

Summer Air Conditioner for Homes

A NEW HOME AIR CONDITIONER which converts any forced warm air heating system into an all-year air conditioning system is in production by the United States Air Conditioning Corp., Minneapolis.

The compact unit, which utilizes the ductwork, blower, and filters of the warm air system, can be installed



in either new or existing homes. It requires only two simple connections to the duct system, a hook-up to the water supply and drain, and electrical connections.

The owner of a home with a forced air heating system has at his disposal a complete system of air distribution machinery which is normally inoperative for four to six months of the year. Because of its simplicity of design, this home conditioner puts these facilities to work during their usual off season to provide cool summer comfort.

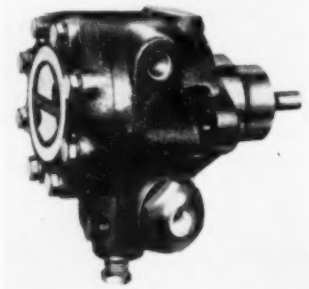
The unit is built in 2, 3, and 5 hp models and features angle iron frame construction with heavy gage removable panels. The cabinet is bonderized, then finished with corrosion-resistant base coat and baked enamel. Heavy glass fiber lining is used throughout for thermal and sound insulation.

A 3-position switch permits two stages of operation — cooling or ventilation alone. A built-in thermostat provides automatic control of room temperature. Internal water piping, complete for connection to city water supply or cooling tower for recirculation, is provided. AA 1

Two-Stage Fuel Unit

SUNDSTRAND MACHINE TOOL CO., Rockford, Ill., announces a new self-purging, two-stage fuel unit. The pump, designated as Model H, pumps only solid oil to the nozzle. The oil circuit automatically purges all air. Thoroughly field tested, the unit has design simplicity, with more convenient gauge ports.

Leak-proof valve construction, a "Rota-Roll" pumping unit, adjustable piston-type valve for pressures from 75 to 150 psi, a large strainer, anti-hum diaphragm and hydraulically



equalized pumping members for quiet operation are among its features.

Pumps are available for 3, 6, 10, 14, and 20 gph firing rates, with strainer capacities of 6, 10, 15, and 20 gph. They are recommended for two-pipe systems having vacuum requirements up to 20 in., and where two-stage performance is required. AA 2

Perimeter Heating Sidewall Diffuser

HART & COOLEY MANUFACTURING CO., Holland, Mich., has just introduced a new sidewall diffuser for perimeter heating. A unique combination of straight and horizontal face fins disperses the air in a 170° spread upward, providing a curtain of warm air over the exposed wall or window area. A small amount of warm air is also permitted to flow down over the floor.

The diffuser is equipped with a volume control adjusting screw for balancing the system at the diffuser face. This new unit can also be used with conventional forced air systems with satisfactory results when installed just above the baseboard. AA 3

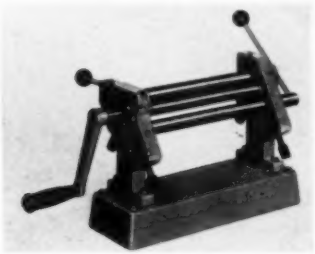
Manual Type Roller Has Wide Bending Versatility

A NEW HAND-OPERATED slip roll which forms complete circles in 16-gauge steel in less than one-fifth the time it ordinarily takes and also forms bends at any point in a sheet of material, is announced by O'Neil-Irwin Manufacturing Co., Lake City, Minn.

Designated as the Di-Acro Roller, an exclusive feature is a cam actuated idler roll, with which complete circles

of 1 in. dia. or larger can be formed in two passes through the rolls.

In "two pass circle forming", the cam operating lever lowers the idler roll to allow insertion of the material. It also raises the roll to a pre-set position which determines the diameter of the circle to be formed. On the first pass through the roller a half circle is formed, and on the second pass the circle is completed. Parts can be duplicated with great accuracy and at a high rate of production since the idler roll always returns to its pre-set position.

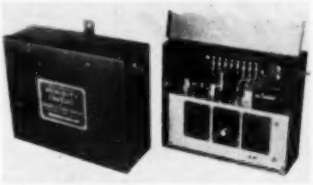


Round, flat and square stock as well as many other ductile materials can be formed. Maximum material forming capacity of the roller is ¼ in. round steel bar and ¼ in. tubing, or their equivalents.

Di-Acro Roller is available in two sizes. The No. 1 roller forms material up to 6 in. in width. The No. 2 roller forms material up to 12 in. in width. Both machines will form material to a one inch diameter or larger. AA 4

Electronic Humidity Control

Two-position or proportioning, humidifying or dehumidifying, for process or comfort control, a new Electronic Humidity Control is introduced by Barber-Colman Co., Rockford, Ill.

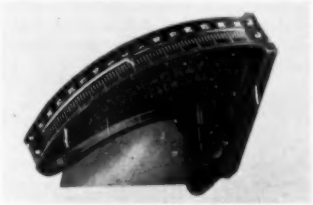


It features super-sensitive, instant response with plug-in element, wide range and simple adjustments. A moisture-sensitive element changes the resistance instantly with minute changes in relative humidity. In spaces supplied by a central fan, the sensing element is mounted either in the duct or the conditioned space. AA 5

Sheet Metal Inspection Tool

A UNIQUE PROTRACTOR for measuring angles on sheet metal parts is being produced by the Sheridan-Grey Co., Redondo Beach, Calif. Called an "Angle-Chek", this device permits quick checking of angles on parts formed by such equipment as hydraulic presses and brakes. Accuracy is within plus or minus five minutes.

The device's time-saving value has been proved by its use in sheet metal, tooling and inspection departments. AA 6



Furnace Draft Regulator

THE WALKER MANUFACTURING & SALES CORP., St. Joseph, Mo., has announced a new Domestic Fuel Saver Automatic Draft Regulator, Type 34C.

This new control is engineered for a wide range of applications to central heating plants, where it maintains positive and accurate control over stack range of drafts. Adjustment is indicated by pointer and dial for High, Low and Medium. AA 7

(Please turn to page 134)

This coupon is for your convenience in obtaining more information about any of the equipment mentioned in this issue or copies of the literature offered in the readers' service section.

Keep your record of sources of supply up to date by adding the new products and companies listed here to your January 1952 AMERICAN ARTISAN annual directory section.

7-52

FOR YOUR CONVENIENCE

American Artisan
6 N. Michigan Ave., Chicago 2, Ill.

Please ask the manufacturers to send me full particulars about the equipment mentioned under the following reference numbers in Equipment Developments and new Literature

(Circle each number in which you are interested)

Equipment Development

1 2 3 4 5 6 7 8 9 10 11 12 13 14

New Literature

101 102 103 104 105 106 107 108 109 110 111 112 113
114 115 116 117 118 119 120 121 122 123 124 125

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

We need 3000 Carloads of Scrap a Day

Every pound of dormant scrap you can furnish will help to keep the steel mills and foundries producing

Steel mill furnaces are gobbling up scrap faster than it's being delivered. To maintain planned schedules of steel production for both military and civilian purposes, the mills must have *more* iron and steel scrap.

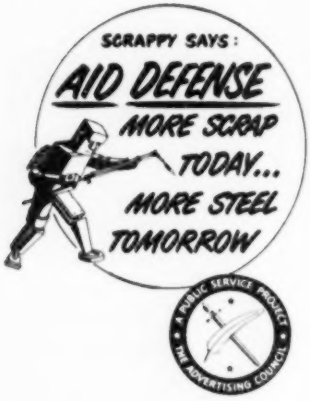
Get in the Scrap—Yourself!

Whatever your business, you undoubtedly have scrap. If there's dust on it or rust on it—it may be scrap. If it's scrap—it's *needed.*

Turn it over to your local scrap dealer and help lick this critical scrap shortage.

What you can do to help

1. Appoint one top official in your plant to take full responsibility for surveying the plant and getting out the scrap.
2. Consult with your local Scrap Mobilization Committee about its program to help out in the scrap crisis. The nearest office of the National Production Authority, Department of Commerce, can tell you who your local Scrap Mobilization chairman is.
3. Call in your local scrap dealer to help you work out a practical scrapping program. Non-ferrous scrap needed, too!
4. Write for free booklet, "Top Management: Your Program for Emergency Scrap Recovery", addressing Advertising Council, 25 W. 45th St., N. Y. 19.



FACTS YOU SHOULD KNOW ABOUT STEEL PRODUCTION

Steel production	1950	97,800,000 net tons
Estimated capacity	1952	119,500,000 net tons
Purchased scrap used*	1950	29,500,000 gross tons
Estimated purchased scrap requirement*	1952	36,200,000 gross tons

*All consumers

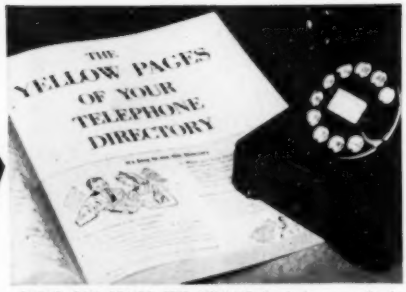
This advertisement is a contribution, in the national interest, by

AMERICAN ARTISAN

Down-to-earth selling ads for warm

- Take advantage of the special cooperative advertising for local newspapers, and for radio and television. American-Standard furnishes the advertising material and pays half the space or time costs.
- Use the packaged direct mail program which includes selling letters and attractively illustrated literature imprinted with your own company name and address.
- List your company name and address in the Classified Telephone Directory under the familiar American-Standard trademark.
- Identify yourself as a retailer of American-Standard products by using outdoor and in-store signs.
- Display American-Standard products in your store. Use the American-Standard warm air heating catalogue and descriptive point-of-sale literature to acquaint your sales force with the effective selling points of American-Standard products.
- Get full details of the American-Standard Better Retailing Plan from your wholesale distributor. Put it to work to build bigger sales and better business.

like these RING THE BELL air retailers



PHONE CALL BRINGS FREE ESTIMATE. Look in your classified telephone book under "Furnaces" for the name of your local American-Standard heating retailer. Phone him and

SEND COUPON FOR FREE BOOKLET ON WARM AIR HEATING [PLEASE PRINT]

American-Standard
Dept. AA-72, Pittsburgh 30, Pa.

Please send me your free WARM AIR HEATING BOOK.

I am modernizing ____ Building new home ____

Name _____

Street _____

City _____

County _____ State _____

If you live in Canada send to: Standard Sanitary & Dominion Radiator, Ltd., Box 39, Station D, Toronto

● Hard selling consumer magazine ads like these shown here are really ringing bells for warm air heating retailers who take advantage of American-Standard advertising.

Not only do these ads sell the benefits of American-Standard warm air heating equipment, but they also stimulate immediate action on the part of prospective customers —at the retail level, where it will do you the most good.

Emphasis on listings in the Classified Telephone Directory rings the phones of retailers who list under American-Standard trademark listings.

Coupon returns are referred to local retailers after requests for literature have been answered. Follow-ups from these leads produce substantial business for alert retailers.

For complete information about the American-Standard Better Retailing Plan, call or contact your wholesale distributor. He will show you how you can get the most out of the industry's biggest advertising program, and the many other resultful selling aids available to you.

American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pennsylvania

AMERICAN-Standard
HEATING

Serving home and industry

AMERICAN-STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON

Best Solution

to Industrial Ventilating, Heating and Cooling Problems

ANEMOSTAT
Type HU-4 Air Diffusers equipped with these 3 accessories
offer controlled pattern and volume

① Selected quantity of air is sliced from main air supply and turned into takeoff.

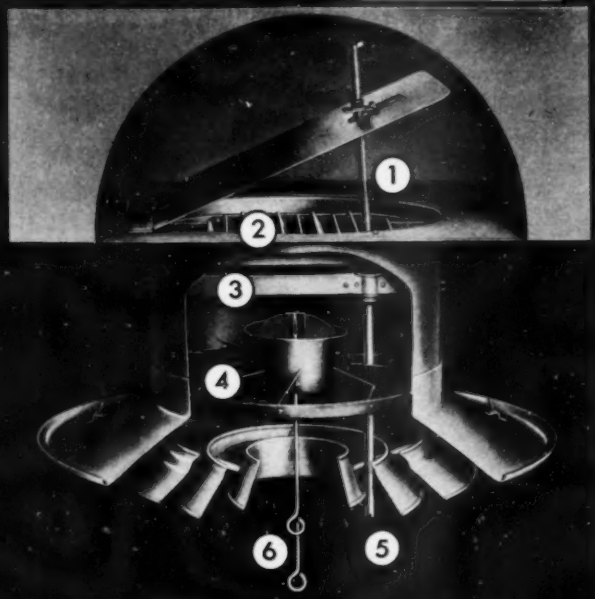
② Multiple vane deflector straightens flow of air and equalizes flow in takeoff.

③ Rugged brace rigidly holds volume damper without vibration.

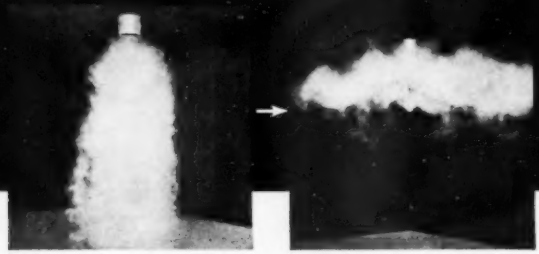
④ Radial vane deflector distributes air evenly over the expanding cones of the *aspirating* diffuser.

⑤ **ADJUST VOLUME** by turning this rod with screw driver.

⑥ **CHANGE PATTERN** by pulling diffuser rod.



ADJUSTABILITY FROM VERTICAL TO HORIZONTAL



No drafts—no special tools—no wasted time—no ladders—no accidents—no labor complaints.

Large range of sizes to handle from 1,000 cfm to 15,000 cfm per unit.

Specify Anemostat HU-4 Diffuser complete with Splitter Damper, Equalizing Deflector and DE-2 Radial Deflector.

ANEMOSTAT®

DRAFTLESS *Aspirating* AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA
10 EAST 39th STREET, NEW YORK 16, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

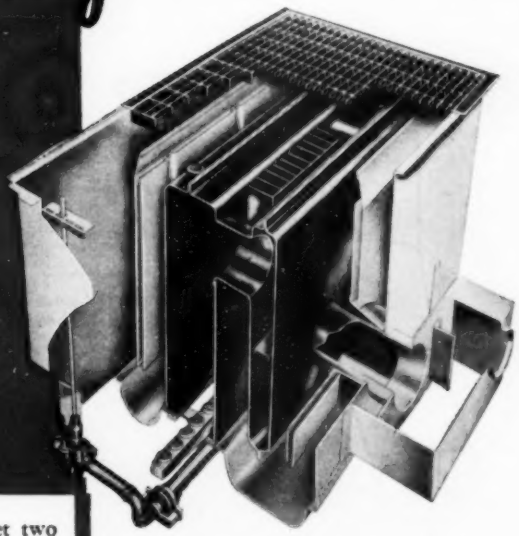
"No Air Conditioning System Is Better Than Its Air Distribution"

AC 1891

FOR PROFITS

Get in on the Ground Floor

WASHINGTON GAS FLOOR FURNACES



Producing as much as 50% more heat, yet two whole inches shallower than comparable units, the WASHINGTON Gas Floor Furnace has much to offer the retailer and contractor. It is installed easily in the floor of any building with or without a basement. Multiple installations can be used when heating requirements are higher. Automatic electric controls are available for all models.

WASHINGTON Gas Floor Furnaces are competitively priced, too. You can earn extra profits and extra customer good will by installing these dependable units. Be ready to offer the best . . . for new installations or quick, low-cost conversion...with WASHINGTON Gas Floor Furnaces, a product of Gray & Dudley Company, a respected name in heating appliances for almost 90 years. Use the coupon for complete information.

GRAY AND DUDLEY COMPANY
Established 1862
Nashville, Tennessee

Check These Features

- ★ *Easy to Install*
- ★ *More Heat from Less Space*
- ★ *Extremely Trouble-Free*
- ★ *35,000 to 70,000 BTU ratings*
- ★ *Three Sizes*
- ★ *AGA Approved for all gases*

Please send me specifications and details on WASHINGTON Gas Floor Furnaces. I am a

☐ Dealer ☐ Contractor

Name_____

Firm_____

Address_____

City_____ State_____

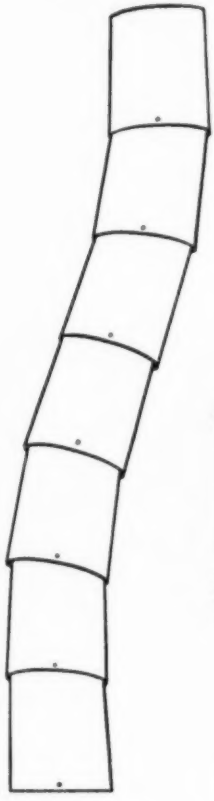
The most complete line!

STAINLESS STEEL

CHIMNEY LINERS *by* EXCELSIOR

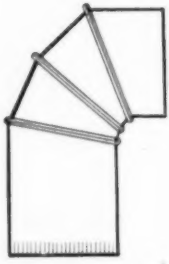
for

GAS HEAT INSTALLATIONS

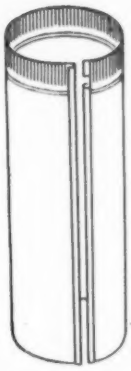


7-piece, 4-foot, 26-gauge flexible snake section for chimney offsets.

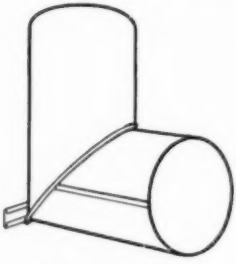
26-gauge, 4-piece 90° adjustable elbows.



26-gauge, 4-piece 90° long-end adjustable elbows.

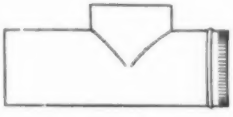


26-gauge pipe 36 inches long.

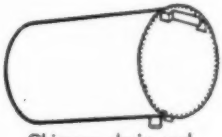


26-gauge, soldered, long-end 84° elbows for bottom end of liner.

Reducers



26-gauge tees



Chimney drain and cap

Write for Full Particulars and Prices

THE EXCELSIOR STEEL FURNACE COMPANY

ADI STANDARDIZED PRODUCT

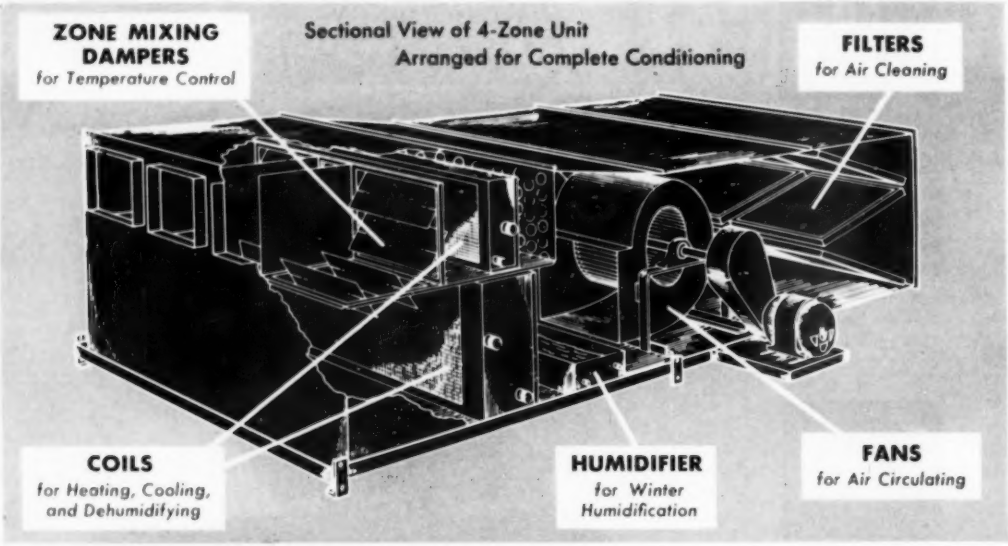
118 S. CLINTON ST. **Phone: FRanklin 2-8120** **CHICAGO 6, ILL.**

EXCELSIOR HEATER & SUPPLY DIV.
The Excelsior Steel Furnace Company
879 Hersey Ave., St. Paul 4, Minn.
Telephone: NEstor 7255

BREX & BIELER DIV.
The Excelsior Steel Furnace Company
229 Marion St., Brooklyn 33, N. Y.
Telephone: GLenmore 2-7881

EXCELSIOR HEATING SUPPLY DIV.
The Excelsior Steel Furnace Company
528 Delaware St., Kansas City 6, Mo.
Telephone: Victor 3715

Blow-Thru MULTITHERMS



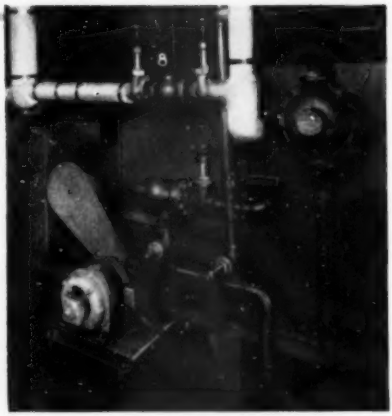
for ZONE CONTROL *Air Conditioning*

Different Temperatures and Humidities at the SAME Time with ONE Unit

One Clarage Blow-Thru Multitherm can be used to air condition various parts of your building exactly as your requirements warrant.

ZONE CONTROL compensates for the difference in solar radiation on different parts of a building during different times of the day. It also takes into account variations of exposure, wind velocity, construction, and different internal heat loads.

Thus winter and summer, if desired, you can maintain *different temperatures and different humidities* in various parts of your building. Each zone is automatically and independently controlled — yet only ONE Clarage Blow-Thru Multitherm required.



This 3-zone Blow-Thru Multitherm unit air conditions the 2-story office building of the Northern Indiana Brass Co., Elkhart, Indiana. Installation made in December, 1940.

CLARAGE
—HEADQUARTERS for Air Handling and Conditioning Equipment

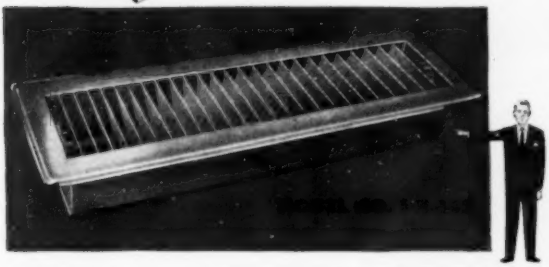
NEW BULLETIN 1310 gives descriptive details, specifications, capacities, and dimensions. Send for your free copy today.

CLARAGE FAN COMPANY
631 PORTER STREET
KALAMAZOO, MICHIGAN

APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

Standard is always first with the finest

here it is...
the floor register everyone wants!



STANDARD'S NEW PERIMETER FLOOR REGISTER

with Standard's exclusive

Dialamatic Control

Standard's new, exclusive dialamatic control gives you POSITIVE HEAT CONTROL. The set screw arrangement means easy balancing, trouble-free operation!

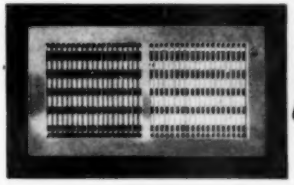
SPECIFICATIONS

The blades of model PH-142 are fabricated of 16 gauge steel, the blades are set in a fixed-fan angle degree for even deflection. The Frame is of one piece, 18 gauge steel construction. The Louvre box fabricated of 16 gauge steel. Packed one to a box, and 20 to a master carton. Comes handsomely finished in gleaming, durable metallic-lustre finish.

Duct opening	Overall of Louvre Box	Overall of Face	Open Area	Depth of Box
2¼" x 14"	2⅛" x 13¼"	3⅜" x 15⅜"	80%	2⅛"

THE NEW, IMPROVED *multiple valve* REGISTER

Has Horizontal Multiple Valve Louvres, and 3/16" turned down edge for flush sidewall installation. The attached sponge rubber gaskets are an *extra* feature that prevents escape of air and chipping of wall surface. The Louvres are adjustable so that the flow of air may be directed either downward, straight forward, upward, or to complete shut-off.



MODEL NO. 331

Metallic Finish standard finish on this style

MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION INDOOR COMFORT

write now!

No cost or obligation to you

Gentlemen: Please send me your new pocket catalogue at no cost to me.

NAME _____

ADDRESS _____ CITY _____ ZONE _____ STATE _____

COMPANY NAME _____

Standard Stamping and Perforating Co.

3137 West 49th Place—Chicago 32, Illinois

"Stiff price competition doesn't hurt our Chronotherm sales"

Here's a heating dealer from Boston who "bats" better than .500 on tough price jobs!

A. L. Ducilley, right, general manager of the Automatic Heating Corp., talking to Honeywell salesman John Donovan

"Just like everyone else, we're faced with a lot of stiff price competition these days.

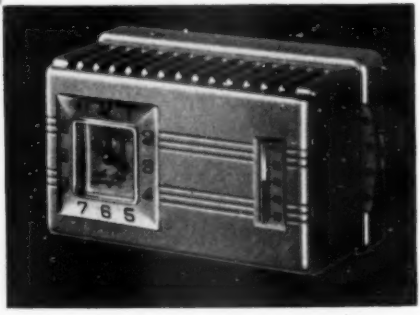
"But unlike a lot of heating dealers, I think we've hit upon a pretty good piece of sales strategy for getting around it.

"We simply quote our jobs based on the standard, *manually operated* Honeywell thermostat—but at the same time bring along a Chronotherm. We tell customers that for just a little extra money they can get *fully automatic* heating comfort for their homes. And you should see them sit up and take notice!

"Then we cover the wonderful automatic features of the product. We explain how—by fuel savings—they come out way ahead with a Chronotherm, in the long run.

"To date, our batting average on 'price jobs' has been better than .500. And with twenty-five salesmen out there pitching, this extra profit, over a year's time, comes to a substantial figure.

"Customers are always better satisfied, too, after living with a Chronotherm for a while. They're *happier* and that's the way we like to keep 'em."



Sell the famous Honeywell Chronotherm!

Always offer it as an alternate on every bid you make! Latest surveys show that 3 out of every 4 families with thermostats raise and lower temperature settings every day, *by hand*. This represents a big, potential market for dealers who sell the Chronotherm—because the Chronotherm *automatically* raises temperature in the morning, *automatically* lowers it at night! For full facts, call your local Honeywell office. Or write Honeywell, Dept. AA-7-148, Minneapolis 8, Minnesota.

MINNEAPOLIS **Honeywell**

First in Controls

H HONEYWELL

Another Honeywell Plus-Profit Idea

A Complete Line of Warm Air Furnaces

- For Gas, Oil, Coal and L. P. Gas
- Gravity and forced air types
- Hi-Boy, Lo-Boy, Counter-Flow and Horizontal Units

A Complete Line of Pipe and Fittings

Forced Air Duct Systems
- Reduction System Fittings
- Extended Plenum System Fittings
- Perimeter System Fittings
- Small Pipe System Fittings

Forced Air Fittings for:
- Floor
- Baseboard
- Sidewall
- High Sidewall

Gravity Fittings for:
- Floor
- Baseboard
- Sidewall
- Pipe, Elbows and Angles

All fittings die-cut and cartoned

National Advertising

American Home
Better Homes and Gardens
House Beautiful
House and Garden
Living for Young Homemakers
Small Homes Guide
Successful Farming

Complete Line Catalog

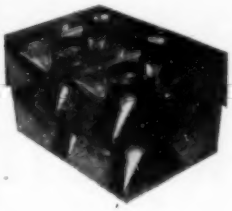
A 104 page quick reference catalog on everything you'll ever need in furnaces and pipe and fittings. All under one cover.

For Bigger Profits

WILLIAMSON
WARM AIR HEATING SYSTEMS

Complete Line

Over 100 models of gas, oil, coal or LP gas fired furnaces are available for any size home, small or large, new or old. Attractive in appearance, efficient in operation and competitively priced—WILLIAMSON furnaces are designed for fast installation, dealer profit, and home owner satisfaction. A line of gas and oil conversion burners and coal stokers round out a product picture attractive to dealers interested in quality equipment purchases from one reliable source.



Like the equipment line, the WILLIAMSON Pipe and Fittings line is just as complete. There are Small Pipe systems, conventional size pipe and fittings, all *die-cut* for absolute uniformity and perfect fit. Zip-Slip joints make up tighter, straighter and faster than any other type. WILLIAMSON Pipe and Fittings are "packaged" in easy to handle cartons for warehousing, storing and quicker inventory taking. Time, labor and space are materially reduced with WILLIAMSON fittings.

WILLIAMSON dealers are backed by a complete hard-hitting national advertising campaign in the leading home publications—real live inquiries to follow-up.

WILLIAMSON dealers can find the product and data they want in one complete catalog covering equipment and pipe and fittings. No dozens of catalogs to thumb through

A WILLIAMSON Dealer is a PROFITABLE Dealer. Why don't you Join the Ranks Too?

THE WILLIAMSON HEATER CO.
DEPT. AA-7 3500 MADISON RD. CINCINNATI 9, OHIO

The HIGH-STRENGTH SHEET

is Galvanized Steel

Of all the materials used for ordinary sheet-metal work, steel is the strongest and stiffest.

This means that galvanized steel has less tendency to buckle or kink when it is handled. It usually requires less bracing or stiffening, and can be used in longer sections than sheets made from other metals. Steel sheets also have more resistance to damage from denting or punching.

Bethlehem Galvanized Sheets are made of strong, durable steel, either plain or copper-bearing. Added to this steel is an adequate coating of zinc to guard against corrosion. This combination provides an economical long-lasting material for any kind of sheet metal work.

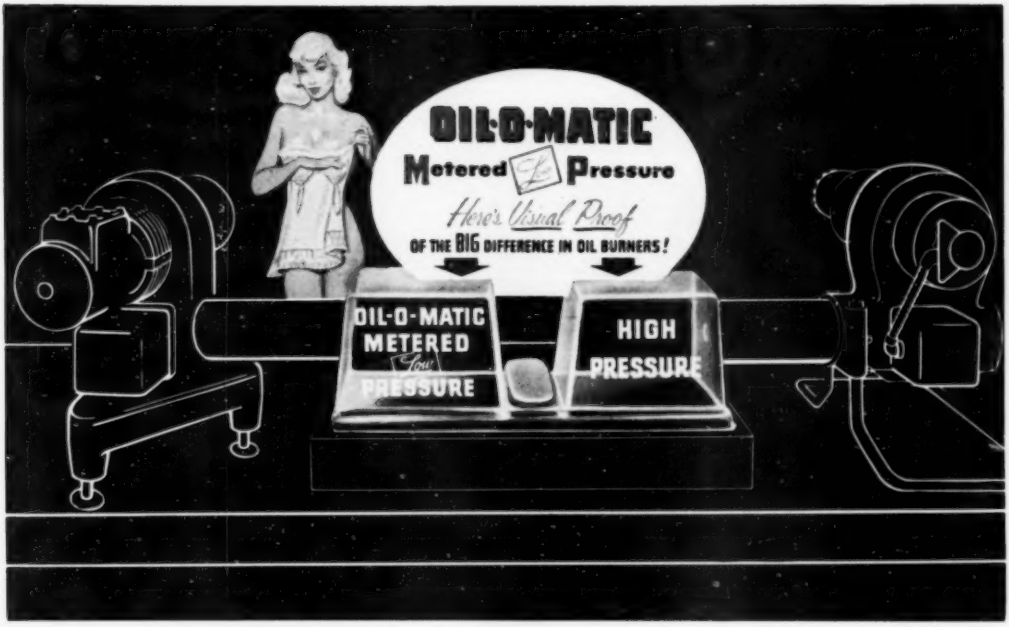
When you consider the excellent quality, the low cost and the easy workability of Bethlehem Galvanized Sheets, you can see why they are in constant demand by sheet metal contractors and fabricators.

Bethlehem
GALVANIZED
Steel Sheets

★ BETHLEHEM STEEL ★

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation



OIL·O·MATIC "STRIP TEASE"

takes wraps off atomization story

STOPS 'EM! Live action demonstration captures the eyes of passers-by—halts people "in their tracks"—compels their attention to your window or store display. "Wow-ed 'em" spectacularly at the Philadelphia O.H.I. show and at home shows in Bristol, Conn.; Harrisburg, Penna.; Grand Rapids, Mich.; Milwaukee, Wis.

SHOWS 'EM! Dramatically *proves* Metered Low Pressure superiority. Burners in actual operation up to ignition point—you actually see what happens to the oil and air with Metered Low Pressure *vs.* High Pressure.

SELLS 'EM! Even Missouri-bred skeptics believe what they see. And what they see sells your Williams OIL-O-MATIC burners and units, makes 'em fast moving profit-makers for you!

Only **Oil-O-Matic** *has Metered Low Pressure. Therefore, only* **Oil-O-Matic** *dealers can cash in on this sensational sales-making display. Write for facts about the profitable* **Oil-O-Matic** *Franchise . . . today!*

EW PRODUCTS

WILLIAMS OIL-O-MATIC DIVISION

Eureka Williams

CORPORATION

Bloomington, Illinois

Better Products, Better Made... for better living!

PUT YOURSELF IN THE Homeowners' Shoes!

GET THESE 6 DEALER ADVANTAGES WITH Thatcher

MINIMUM Sales Resistance . . . You can say "Yes" with enthusiasm to every question about modern features that spell cleanliness, safety, convenience, quality, dependability and automatic, care-free operation.

MINIMUM Installation Time . . . Each unit is the result of constant progress in design—the last word in easy erecting—to assure you less work, less time, less cost.

MAXIMUM Appearance . . . Streamlined design—handsomely styled in deep maroon or maroon and grey to blend with color schemes anywhere.

MAXIMUM Selection . . . No matter what the heating problem (gas, oil or coal) Thatcher has the correct model and size to meet the need.

MAXIMUM Sales Support . . . It's yours from all departments—including a "get up and go for greater sales" advertising and sales promotion program.

MAXIMUM Profit . . . In the original sales, and in greater volume because of word-of-mouth praise and prestige of Thatcher equipment. That means more and more sales come your way with less selling effort and expense.

IF YOU were *buying* heating equipment instead of selling it, chances are ten to one you, too, would insist on getting all the following features for your investment:

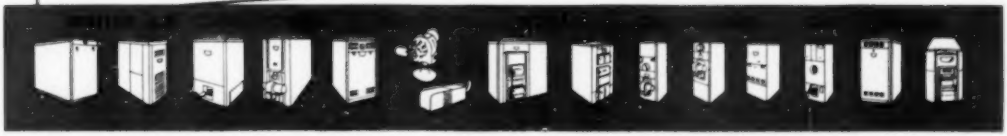
Even-temperature warmth for perfect indoor comfort. The carefree convenience of automatic heat. The latest in engineering principles for long, trouble-free operation and efficient performance. Eye-pleasing modern design. A model and size that will meet your exact needs. A well-known brand name at a price within your budget.

Thatcher, the oldest and one of the most reliable names in heating, has the line that was constructed to give homeowners all these features . . . and more!

Take the first step toward getting a bigger share of the new homes and replacement markets today. Write Thatcher Furnace Company, Garwood, New Jersey for our new catalog containing all the facts!

the oldest name in heating!

Thatcher
FURNACE COMPANY
Specialists in Heating Since 1850



"I urge every American employer to promote the Payroll Savings Plan..."

DECHARD A. HULCY, PRESIDENT
Chamber of Commerce of the United States

"I urge every American employer to promote the Payroll Savings Plan among his employees as a means of building a reservoir of savings."

As President of the Chamber of Commerce of the United States . . . with literally thousands of contacts throughout industry and commerce . . . Mr. Hulcy is uniquely qualified to evaluate the Payroll Savings Plan.

As a business man, Mr. Hulcy puts his finger on a most important accomplishment of the Payroll Savings Plan: the enormous reservoir of savings, *future purchasing power*, built up by systematic saving.

Today, millions of Americans hold Series E Defense Bonds totaling $34.7 Billion. It will surprise many to learn that this figure is $4.8 Billion greater than on V.J. Day. And the $34.7 Billion total of outstanding Defense Bonds is mounting as more and more employers recognize the importance of the Payroll Savings Plan. During 1951 there was a sizable increase in the number of men and women saving through Payroll Saving Plans where they work.

During the calendar year 1951, 45,500,000 $25 Series E Bonds were purchased – a gain of 17% over the previous year. 12,000,000 $50 E Bonds were purchased in the same period, 14% over the previous year. $25 and $50 denominations are the bonds bought by Payroll Savers.

Building a reservoir of savings and future purchasing power . . . contributing to America's defense effort . . . helping to maintain America's economic stability by providing a check on inflationary tendencies, the Payroll Savings Plan is doing a three-way job.

If your company hasn't a Payroll Plan, or if your employee participation is less than 60%, the Savings Bond Division, U. S. Treasury Department will be glad to help you take your place among America's Honor Roll of "Companies on Payroll Savings". Phone, wire or write to Suite 700, Washington Building, Washington, D. C.

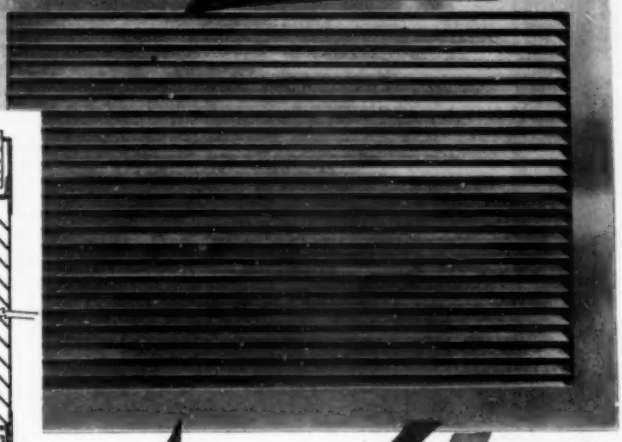
The U.S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

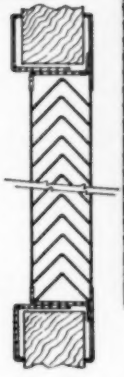
AMERICAN ARTISAN

NEW DOOR and PARTITION GRILLE

CUTS COST UP TO 35%

NO SEE-THRU





● Cut-a-way view shows new auxiliary frame. Quickens installation—makes a smoother appearance.

NEVER BEFORE SUCH A DOOR GRILLE FOR THE MONEY. It's so far ahead in design, construction and performance that it's guaranteed to open your eyes.

Skilled Airfoil designers drew, tested and built it to give architects, contractors and engineers the *finest door grille possible*. It's made to OUTLAST—OUT PERFORM.

First—*it's more rugged*. Will withstand heaviest use and abuse for years and years. Second—*it's low in cost*, competitively priced. Third—*it's good looking*. Will add beauty every time it is installed. Fourth—*louvers are absolutely secure*. Do not rattle when door is slammed.

- **HEAVY GAUGE STEEL. REINFORCED ON EITHER SIDE.**
- **ADAPTABLE TO ANY DOOR WIDTH...MADE TO ANY SIZE.**
- **73% FREE AREA.**
- **ONE-PIECE FRAME.**
- **CUTS DAMAGE AND REPLACEMENT COSTS. NO EXPENSIVE CALL BACKS.**

GET THE COMPLETE INFORMATION ON THESE AND ALL AIRFOIL GRILLES TODAY

Air Foil

AIR CONDITIONING OUTLETS

FREE!

CHECK TYPE OF GRILLE ON WHICH INFORMATION IS DESIRED

- ☐ Air conditioning outlets
- ☐ Return air grilles and registers
- ☐ Volume controllers
- ☐ Perforated metal and ornamental grilles
- ☐ Industrial grilles
- ☐ Special made-to-order grilles

TITUS MANUFACTURING CORP., WATERLOO, IOWA

- ☐ RUSH information on new door and partition Grilles.
- ☐ Send complete catalog.
- ☐ Send literature on above checked items.

NAME _____

ADDRESS _____

CITY _____ STATE _____

Here's the heating unit designed for today's smaller one-floor homes!

GENERAL MOTORS
DELCO-HEAT

REVERSE FLOW CONDITIONAIR

Today, there is an increasing trend toward radial and perimeter heating in small, basementless, one-story homes. These homes require a low-cost, specially designed heating unit. And Delco Appliance engineers have answered this need with the sensational Reverse Flow Conditionair.

In the Reverse Flow, air is introduced through the blower-filter unit located atop the furnace unit. A large capacity centrifugal type fan forces the air down over the circle air radiator and heat transfer unit into ducts installed below the floor.

The result is a low-cost, 75,000 Btu heating system that gives steady radiant heat around the entire perimeter of the house, *plus* forced warm air heat through strategically placed registers that eliminate "cold spots" in the house.

Other models in the OPC line and in other Delco lines are available to give the installer a complete range of Conditionairs with which to meet any new building requirement or any modernization need.

OPC-H High Model for utility room installations—designed for utility or alcove installation or wherever floor space is limited. Three sides of unit are free of controls and obstructions so it may be easily installed in recessed areas.

OPC-LD De Luxe Model—has the blower filter unit enclosed in an extended housing which matches the furnace cabinet. The result is a handsome, economical unit that adds to the appearance of any basement or recreation room.

OPC-L Low Model for basement installations—for use where overhead space is restricted. The blower unit is joined at the back and the cold air return may be attached at any of the three sides or on top of the blower unit.

The completeness of the Delco-Heat line . . . the flexibility of Delco-Heat products . . . Delco's reputation for dependable service, and low competitive prices help every Delco-Heat distributor build a sound, more profitable business. For complete information about the profit possibilities of a Delco-Heat franchise send coupon below.

Delco-Heat manufactures a complete line of oil and gas-fired heating equipment for any type heating system, any modernization job

For a good deal—DEAL WITH DELCO

CLIP AND MAIL TODAY!

DELCO APPLIANCE DIVISION,
General Motors Corp., Dept. AA, Rochester 1, N. Y.
Please send me information about a Delco-Heat franchise.

Name _____

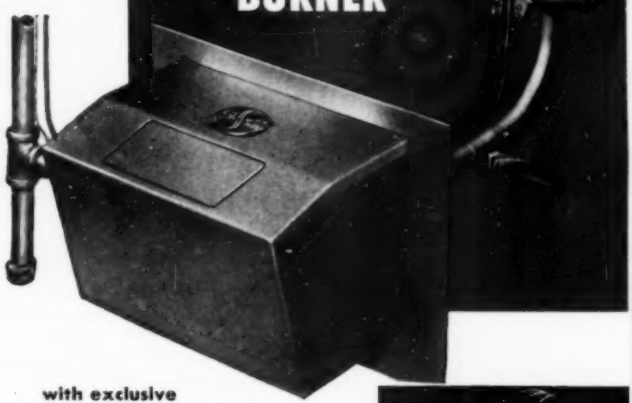
Firm Name _____

Street _____

City _____ *Zone* _____ *State* _____

You'll be PROUD of every installation

A.O.Smith MODEL 205 De Luxe GAS CONVERSION BURNER



Outperforms all others!

In no other burner can you offer the remarkable heating satisfaction which this gas conversion unit assures.

Perfect combustion and modulation, regulated by the exclusive "Magic-Heet" Control, provides just the right amount of heat at all times. Steady, *even* home temperatures are maintained regardless of sudden outdoor temperature changes.

Model 205 is unusually easy to install and service, requiring less time than other conversion jobs. The entire assembly fits in center of ash door. All controls, except pressure regulator, are completely assembled and checked at the factory. There are NO complicated adjustments to make. Fits combustion chamber of any furnace of 18 to 30 inches in diameter.

Outside "push-button" ignition! A most economical unit to operate, attractively styled, warranted a full year . . . Model 205 will make you PROUD of every installation.

with exclusive

"MAGIC-HEET" CONTROL

"Magic-Heet" Control correctly proportions gas flow to needs. It is actuated by temperature of the cold air duct or return water of a forced hot water system. This avoids off-and-on "layer cake" room temperatures; assures unvarying comfort.

If you MUST sell for less!

MODEL 201 Standard Conversion Burner

Although incorporating many features recommended by leading gas companies, the 201 costs less.

Certified by A.G.A. for all furnace and boiler installations requiring 60,000 to 200,000 B.T.U.'s per hour, in combustion chambers of 18 to 30 inches in diameter.

Model 201 is a conversion burner homeowners will be proud to own. It's priced right for the mass market! Also available for LP Gas.

A.O.Smith CORPORATION

SALES:
Atlanta, Chicago 4, Dallas 2, Denver 2, Detroit 21, Houston 2, Los Angeles 22, Midland 5, Tex. Milwaukee 8, New York 17, Philadelphia 3, Pittsburgh 19, San Francisco 4, Seattle 1, Springfield, Mass., Tulsa 3, Washington 6, D. C.
SERVICE: Chicago 17, Dallas 1, Los Angeles 12, Union, N. J.
International Division: Milwaukee 1
In Canada: John Inglis Co., Ltd. Toronto

A. O. Smith Corporation, Permaglas Heating Division
Dept. AA-752, Kankakee, Ill.

Without obligation, send me all the facts about your De Luxe Model 205 Gas Conversion Burner with "Magic-Heet" Control—and your latest sales building aids, including your "Animated Flame" and furnace mock-up displays, wall hangers and window streamers.

Name _____

Firm _____

Address _____

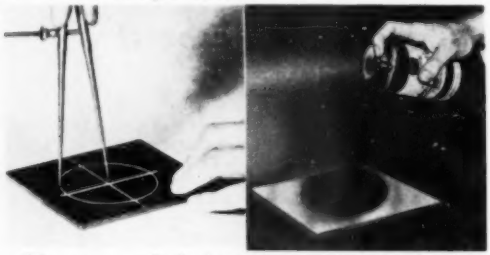
City _____ Zone _____ State _____

Coupon on page 113

New Type Layout Ink

CROWN INDUSTRIAL PRODUCTS CO., Sycamore, Ill., announce their new layout ink for machinists, tool and die makers, production layout men, and inspectors.

Unique features of this layout ink are ease of application and instantaneous drying. Packed and sealed under pressure, this ink is released by pushing a button on top of the container, sending forth a fine spray. The ink dries within 60 seconds to a smooth, hard, non-glare film and is resistant to cutting oils and heat. However, while it will readily adhere to metal, glass, or wood, it is easily removed with lacquer solvent.



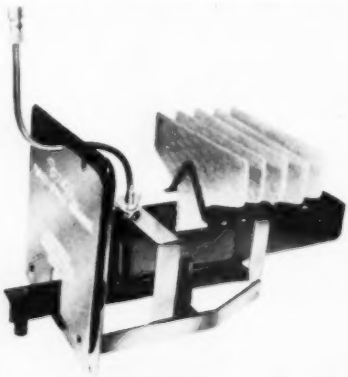
The spray method of application eliminates brushes, and stained hands and clothing. There are no losses from evaporation, hardening, spilling, or broken containers. Standard color is dark blue unless otherwise requested.

AA 8

Porcelain-On-Steel Warm Air Humidifier

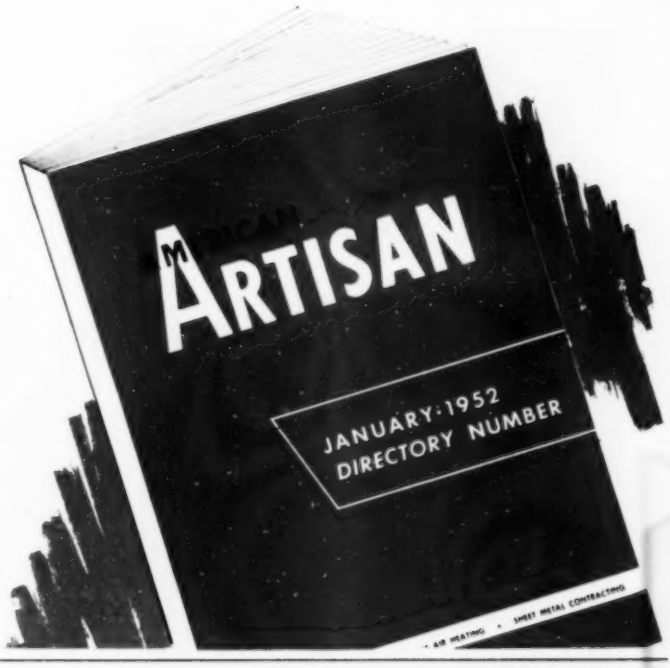
A FLOATLESS WARM AIR furnace humidifier made entirely of porcelain enameled steel is introduced by the Bettinger Corporation, Waltham, Mass.

The unit, suitable for all domestic oil or gas-fired furnaces, is called the Aqua-Lever, and the all-porcelain feature permits easy cleaning and eliminates corrosion and rust. The pan and evaporator plates are designed for easy removal, and a simple flushing lever aids in keeping the valve and pan clear of dirt and sediment.



The unit uses the weight of water in the humidifier as leverage to close the valve. The porcelainized water pan uses the principle of the see-saw and is pivoted off center

"WHO MAKES IT?"... "WHERE CAN I GET IT?"...



Your January Directory Has The Answers.

We know, from a recent mail survey, that over 90 percent of the AMERICAN ARTISAN subscribers questioned are enthusiastic about the YEAR-ROUND VALUE of their January Annual Directory Numbers.

Do you keep yours handy for ready reference on sources of supply? All products used in the field are listed, with names and addresses of manufacturers and trade name information. Many manufacturers show in their ads their complete lines, with detailed product and installation data.

As we begin work on our 1953 Directory, to be published in next January's issue of AA, we invite your comments. Many months of work go into these Directories, and we, and our advertisers, try hard to make them of utmost value. If you have any suggestions on how they can be more useful to you, let us know.

FIRST *in Editorial . in Paid Circulation . in Advertising*

Coupon on page **113**

so that the weight of the proper amount of water closes the valve at the opposite end of the pan. As the water evaporates through the plates, the valve opens automatically, allowing fresh water to enter the pan. AA 9

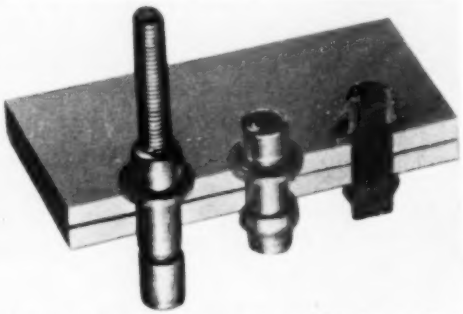
Room Air Conditioner

FRESH'ND AIRE COMPANY, Chicago, a division of Cory Corporation, is turning out production models of the first of two electric air conditioning units. The units, extensively field tested, are available in ½ and ¾-ton capacities, designated respectively as Models 712 and 734.

The Fresh'nd-Aire room air conditioners are enclosed in heavy-gauge bonderized cabinets, finished in baked gray and cream enamel. The Model 712 will have a cooling capacity adequate for rooms up to approximately 300 sq ft; the Model 734 will cool areas up to approximately 450 sq ft. AA 10

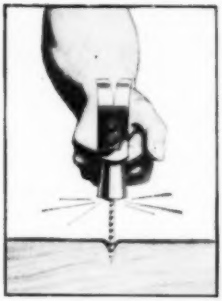
Blind Lockbolts Have Exceptional Strength

DESIGNATED as "the only heat treated alloy steel blind fastener with a positive swaged lock", the Huck Blind Lockbolts made by Huck Manufacturing Co., Detroit, are stated to have exceptional strength and pull-together.



The Huck Blind Lockbolts are available in two sizes, ¼ in. and 5/16 in. diameters; the first has a single shear ultimate allowable of 4,990 lbs and a tensile ultimate allowable of 1,760 lbs. The larger bolt has a single shear ultimate allowable of 8,190 lbs and a tensile ultimate allowable of 3,275 lbs.

These useful tools have accomplished repairs in nine hours where conventional methods would have required



in to stay when you use

P-K

Hardened SCREWNAILS

for fastening sheet metal to wood

- You drive it in like a nail, and as it spirals into the wood, it holds like a screw.
- P-K Screwnails are hardened. They won't bend or break, and, driven home, they won't work loose, or back out, even under the toughest vibration, expansion and contraction. Because each one makes a stronger fastening, fewer Screwnails need to be used on most jobs.
- The hard, needle point pierces lighter gauges of sheet metal with ease. For heavier sheets, holes can be punched first with a Screwnail Punch.
- Try P-K Screwnails, next time, for a better, faster, stronger job . . . and remember . . . IF IT'S P-K, IT'S O.K. Sold everywhere through accredited Distributors.

PARKER-KALON*

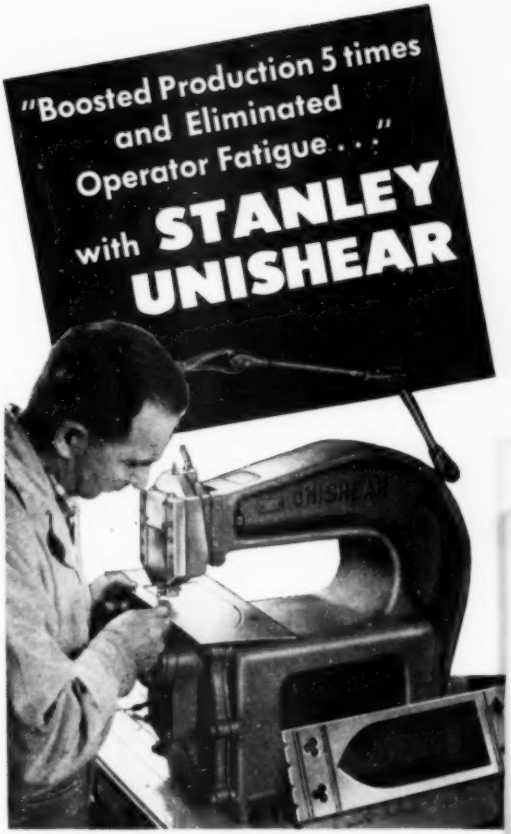
FASTENING DEVICES

Makers Of The Original Self-Tapping Screws

Write for this folder

Gives sizes, head styles, Punch information, full instructions for use. Tells you the many ways Screwnails will help you do a better job. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

*TRADE MARKS REG. U.S. PAT. OFF.



. . . reports A. J. Wasley, Pres.
Wasley Products, Inc.
Plainville, Connecticut

Mr. Wasley describes the benefits of their Stanley O-15 Unishear like this: "With hand snips, we could only make one or two ornamental lighting fixtures a day because of operator fatigue. Now, with the Stanley Unishear, we can turn out as many as ten fixtures in one day . . . do a cleaner job that requires no additional filing . . . *and* we have completely eliminated operator fatigue."

Stanley Unishears will improve the efficiency of your shop, too . . . because wherever sheet metal is cut there is an application for this versatile tool. Comes in 10 different models — including lightweight portables — with capacities from 18 ga. to 6 ga. steel, other metals in proportion. All Unishears have full ball and roller bearing construction . . . automatic plunger lubrication . . . are built for years of trouble-free service.

STANLEY
Reg. U.S. Pat. Off.
HARDWARE • TOOLS
ELECTRIC TOOLS
STEEL STRAPPING • STEEL

Have your Dealer demonstrate — or write for Catalog. Stanley Electric Tools, 642 Myrtle Street, New Britain, Conn.

Coupon on page 113

668 hours. On ten actual emergency repair applications over 659 hours of "down for repairs" time was saved. AA 10

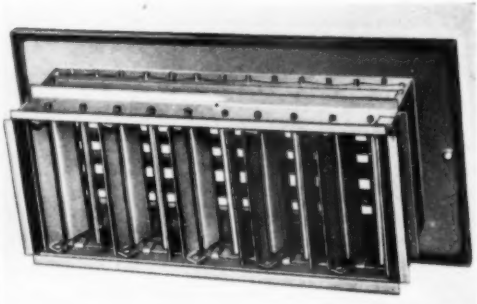
Domestic Gas Burning Incinerator

ADAMS MANUFACTURING CO., Cleveland, is introducing a new 90-pound capacity gas burning incinerator which is claimed to burn all garbage, including bones, fruit rinds, and vegetable husks. The unit is silent, odorless, and completely automatic, well insulated and easily in-

stalled in the basement, kitchen or utility room. The market for gas burning incinerators is claimed to be wide open, since only one-half of one per cent of the possible market has been contacted. AA 11

Airfoil Volume Controller

TITUS MANUFACTURING CORP., Waterloo, Iowa, has developed a new type volume controller, Model AG-35, which is quickly adjustable. Air conditioning systems using this controller can be balanced without removing the grille. A key regulates the air volume from the front of the grille.



Another feature is the manner in which the volume control louvers close. The louvers on this new grille do

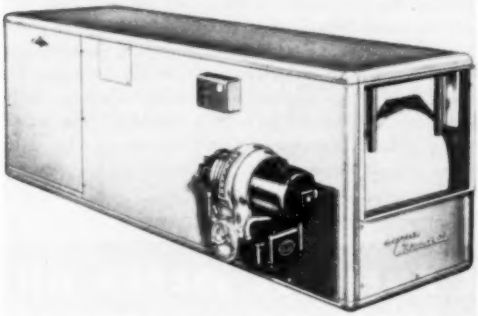
Coupon on page **113**

not close flat but close at a 45° angle. This maintains metering control to the final moment of closure, thus maintaining a minimum disturbance of the air pattern.

The new volume controller can be specified as a single unit or combined with any Airfoil grille as a one-unit combination. AA 12

Horizontal Winter Air Conditioner

THE L. J. MUELLER FURNACE CO., Milwaukee, Wis., manufacturers of Mueller Climatrol heating and air conditioning equipment, announce their new Type 253, a horizontal oil-fired winter air conditioner for residential or commercial installations. The Type 253 may be suspended as a unit heater in garages, shops, schools, and similar installations, or it may be used for all types of residential installations. In homes it can be set on joists or hung from rafters in the attic, or it may be installed in the crawl space or in a closet.



The model is being released in one size only for the time being—with 110,000 Btu input. It will be available with inputs up to 225,000 Btu. The unit is completely updraft in design, and may be converted to gas with a specially designed gas package.

Among the features incorporated in the design and construction of Type 253 are a large multi-blade centrifugal type blower which operates at low speeds to deliver the required cfm. The heat exchanger is easily cleanable without lowering the unit or removing the furnace casing.

The unit casing is of heavy gauge steel which is faced with baked green crinkle lacquer. Interior surfaces of the casing are finished in aluminum to prevent rust. The casing is lined with heavy asbestos insulation which is laminated with aluminum foil, serving to reflect the heat into the heat exchanger and reduce noise. AA 13

Galvanized Coating Material

METALLOY PRODUCTS CO., Los Angeles, Calif., has solved an important problem for welders by reducing galvanized coating bars from 16 in. to 14 in.

The alloy will bond to any metal without the use of flux. When rubbed on a pre-heated surface it will bond to such an extent that you cannot burn it off even though you heat the base metal to bright red. AA 14

NEW LITERATURE

Coupon on page 113

Vertical Flame Oil Burners

SUN-RAY BURNER MANUFACTURING CORP., Jamaica, N. Y., has issued a new bulletin covering the features of their high pressure gun type oil burner. There are three models ranging from .70 to 6.00 gallons per hour for furnace capacities up to 672,000 Btu per hour. A stainless steel nozzle is used with the "Shell" combustion head to obtain high burning efficiencies. The bulletin also gives the specifications for the "VS" series of vertical flame burners for conversion of hand fired round cast iron furnaces to automatically oil fired heating plants. AA 101

Baseboard and Floor Register Catalog

UNITED STATES REGISTER CO., Battle Creek, Mich., has issued a new fitting catalog, No. 52-F, in which the latest furnace pipe and fittings are arranged to make selection of the correct item easy. Small diameter pipe, perimeter heating fittings, the new #1333 base register and floor grilles are shown, along with all the standard pre-fabricated duct sizes. Sample selection problems are illustrated. AA 102

Fastening Tool Kit

RAMSET FASTENERS INC., Cleveland, has published a new catalog describing their new fastening kit and its accessories. Several different kits are available to meet the specific needs of various applications and uses for a rapid method of permanently fastening equipment to structures. Fixtures for brackets, edging, pipe and channel attachment are also illustrated. Ramset tools are used for fastening to steel, concrete and masonry. AA 103

Oil Fired Winter Air Conditioner

A NEW, ATTRACTIVELY DESIGNED, three color circular featuring its oil fired winter air conditioner is announced by Thatcher Furnace Co., Garwood, N.J.

The folder lists 29 mechanical and operating features of the furnace and gives a brief explanation of the method it employs for heating a home. Engineering data and capacities are also included. AA 104

Humidifying Devices

CLEVELAND HUMIDIFIER CO., Cleveland, has issued a two page folder describing its control devices for regulating the moisture content of a room. The leaflet explains how the units supply water to humidifying pans and are sealed to prevent corrosion and eliminate lime deposits on moving parts. It also illustrates how automatic flushing action is obtained by a neoprene diaphragm valve. Cross section illustrations show how the water level, visible at all times, can be controlled by an external lever. AA 105

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AGA's Sales Makers Brochure

THREE WAYS TO ACHIEVE A GREATER GAS INDUSTRY is a new brochure issued by American Gas Association, New York. The attractive mailing piece concisely and convincingly presents three timely campaigns designed to improve gas utility public relations and promote year round sales of gas.

Gas househeating is stressed as a means of increasing gas industry prestige. Different sales approaches are presented for gas utilities operating in areas of full restriction, partial restriction and in regions where gas is plentiful.

A gas househeating sales maker is available for training salesmen, and one of a series of consumer booklets that have been prepared for direct mail and counter pickup.

Promotion of all-year gas air conditioning is offered as the third method of building up gas industry prestige. Sales helps in the form of an air conditioning booklet called *Ten Ways to Take A Year Round Vacation*, are available to help start an all year gas air conditioning program. AA 106

Set Screw Catalog

A NEW COMBINATION CATALOG and reference book on set screws embodying 20 pages of data resulting from 17 years of specialization in set screw manufacturing has just been issued by Set Screw & Mfg. Co., Bartlett, Illinois.

The new book contains illustrations and descriptions of the various types of standard and self-locking set screws, accompanied by data on dimensions, prices, heads, points, thread standard tables, standard fit definitions and other technical data on set screws. AA 107

Instruction for Small Pipe Systems

CHAR-GALE MANUFACTURING CO., Minneapolis, has recently announced an eight-page folder explaining the use of prefabricated ducts and fittings, with sample problems in the selection of small pipe and fittings for various applications. Charts, graphs and illustrations of different register and boot arrangements are included. AA 108

Specifications for Stainless Steel Fastenings

A NEW 20-PAGE CATALOG, entitled "Stainless Steel — Right Off the Shelf", issued by the Star Stainless Screw Co., Paterson, N. J., provides detailed product specifications to aid in selecting and ordering stainless steel fastenings.

Illustrations of the products in each classification quickly identify the various items. Specifications such as measurements and materials are clearly listed in chart form. The product categories include all types of screws, nuts, bolts, washers, pins, studs, rivets, nails, etc. On the pages devoted to stainless steel specialties, diagrammatic drawings are provided to describe the various types of fittings. Several pages are devoted to such informa-

Coupon on page 113

tion as the decimal equivalents of pertinent fractions and the structural quality and suitability of the standard stainless steels. AA 109

Reynolds Architectural Aluminum, 1952 Edition

THE 1952 EDITION of "Reynolds Architectural Aluminum", a 12-page brochure, is now available for distribution from Reynolds Metals Co., Louisville, Ky.

This booklet contains a brief resume of aluminum production facilities as well as a listing of technical literature and films available.

The advantages of aluminum in architectural applications, recommended fabrication methods, approved finishes, and specifications, are outlined. This is followed by a discussion of design factors, illustrated by specific applications and suggestions for use of aluminum. The brochure contains much helpful information for users of architectural material. AA 110

New V-Drive Catalog

USERS OF V-DRIVES will find the new 44-page V-Drive Catalog issued by Maurey Manufacturing Corp., Chicago, a useful source of buying information on fractional horsepower V-Drives and drive parts and accessories. In the range of fractional to 10 hp, this attractively designed and well illustrated book presents complete descriptions, listings and price data on the manufacturer's line of bushed type and fixed bore type cast iron and pressed steel v-pulleys, v-belts, refrigeration fans and fan pulleys and v-drive accessories. Of particular interest are the pages devoted to interchangeable bushings and the new Maurey flexible couplings with a shock-absorbing rubber bond developed by Goodyear engineers.

An engineering data section provides general information helpful to every drive user in selecting the proper drive for his particular requirements. AA 111

Air Conditioning Smoke Control Bulletin

WAYS AND MEANS to guard against panic and damage from smoke accidentally introduced into the air intake of air conditioning systems is the subject of the latest Bulletin No. 521, issued by Ess Instrument Co., Bergenfield, N. J. The four-page brochure includes descriptions and diagrams of all three models of the Ess smoke controls, including one that eliminates the necessity for wall break-throughs by flush mounting. AA 112

Catalog on Air Conditioning, Cleaning, and Handling

A 60-PAGE CATALOG of Westinghouse-Sturtevant products for "putting air to work" is now available from the Westinghouse Electric Corporation, Pittsburgh.

A "Quick-Finder" chart greatly simplifies the problem of selecting the right piece of equipment for the job.

The equipment section consists of an up-to-date set of condensed specifications. The application section tells how to put air to work by relating equipment capabilities

SCHAEFER BRUSHES
—MILWAUKEE—

"BUY SCHAEFER - - - - IT'S SAFER"

Buying ALL your brushes from SCHAEFER, you can be *sure* of one high standard of performance, durability, service, and value. You'll enjoy easier inventory control — and you get the *correct* brush for every need, because of Schaefer's complete line and complete stock.

In Flue and Boiler Brushes — insist on Schaefer's "SILVER BRITE" rustproof spring steel wire, developed for longer wear, more effective cleaning.

SCHAEFER
Rectangular Flue Brushes

No. S-415—2"x14"x14½"
No. S-416—3"x5"x14½"

SCHAEFER
Boiler Brushes

No. S-393—1½"x4"x5½"
No. S-394—2½"x6"x6½"
No. S-395—3½"x6"x6½"

SCHAEFER
Boiler Brushes

No. S-390—1½"x4"x14½"
No. S-391—2½"x6"x14½"
No. S-392—3½"x6½"x 14½"

SCHAEFER
Boiler Brushes

No. S-399—2"x4"x6"
No. S-400—2½"x14½"x8"
No. S-401—3"x5"x6"

Single and Double Spiral Flue Brushes

No. S-432—Single Spiral —1" to 4" dia.
No. S-433—Double Spiral —1" to 4" dia.
No. S-434—For small Flues, ½" to 1" dia.

SCHAEFER Round Flue Brushes of Single Spiral, Flat Steel Wire

No. S-430—1" to 4" dia.

SCHAEFER Rectangular Flue Brushes of Flat Steel Wire—Spiral

No. S-420—2"x3½"x8"
No. S-425—2⅝"x6¾"x7"

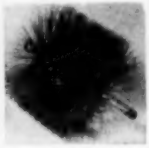
SCHAEFER Furnace Brushes of Silver Brite Rustproof Steel

No. S-442—3", 4", 4½", 5" with 5 ft. handle.

SCHAEFER
Fibre Furnace Brushes

Selected Bassine fibre, flexible wire stem, 4", 5", 6" dia., 48" and 60" handle.

No. S-444-445



SCHAEFER Chimney Cleaning Brushes

No. 66—6", 7", 8", 10" and 12" dia. round style of Black Tempered Brush Wire.
No. 666—6", 7", 8", 10" and 13" dia. oblong style of Flat Tempered Steel Wire.

SCHAEFER
Wire Wheel Brushes

Solid Center Type of crimped steel wire.
No. 276—6" dia. x 1⅝" face.
No. 278—8" dia. x 1⅝" face.
No. 280—10" dia. x 2" face.

SCHAEFER
Handy Wire Brush

No. 816 — For roughing, soldering etc., 6" long, tempered steel wire trimmed 1⅛".

Tin Handle Acid or Dope Brushes

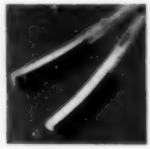
Selected grade bristles in tin ferrule. Width, ⅝", ½", ⅝".

T. W. Flat Acid Brushes

Tinners soldering brush, horsehair filling. 1¼" width, 7½" overall. Twisted wire handle.

Radiator or Condenser Tube Brushes

Twisted in wire handle, selected hair or bristle. Wide range of sizes.
No. 10—⅝" dia. x 2" brush x 6½" overall.
No. 11—½" dia. x 3" brush x 8½" overall.



SCHAEFER Curved Handle Wire Brushes

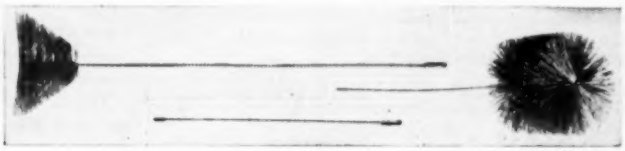
No. 810 — Oil tempered steel wire, trimmed 1¼", hardwood block, 14" long. Brush 6", 2, 3 or 4 rows.

Schaefer Copper Tube Fitting Brushes

Clean fittings faster, easier, safer. In 9 sizes for I.D. or Nominal Fitting Sizes from ¼" to 2".

Schaefer Copper Pipe Cleaning Brushes

For Cleaning Outside of tubing. In I.D. Sizes of ⅜", ½", ¾" and 1".



SCHAEFER Vacuum Cleaner Brushes

No. 1005—Bassine Fibre Brush, 10½" dia. tapered to 3" dia. x 6 ft. long—48" handle with threaded nipple at end.
No. 1000—Bassine Fibre Brush, 10½" dia. brush x 10" long. Handle 39" with threaded nipple at end.

Wire Flue Brush and Extension Handles

4 ft. Handles with Nipple and Coupling.
5 ft. Handles with Nipple and Coupling.
6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Boiler and Flue Furnace Catalog No. 650, or for information on any special brushes you may need.

SCHAEFER BRUSH MFG. CO.

117 W. Walker Street Milwaukee 4, Wisconsin

Coupon on page **113**

to the job requirements. The engineers data section is a collection of tables, charts, and useful data that can be used to determine the correct Westinghouse-Sturtevant product for a given job of air handling, air conditioning, and air cleaning. AA 113

Register and Furnace Accessories Catalog

A NEW 50-PAGE CATALOG covering their complete line of registers, grilles, diffusers, and furnace accessories, has just been made available by Hart & Cooley Manufacturing Co., Holland, Mich.

The catalog also introduces three new items for perimeter heating. One of these new products, the No. 40 design sidewall diffuser, is already in production. Another item, the No. 4 out-of-wall frame, will be ready about July 15th. The third item, the No. 411 floor diffuser, will be available about August 1. AA 114

Heat-Lock Device for Combustion Engineering

AN IMPORTANT NEW ADVANCE in combustion engineering is incorporated in the Heat-Lock, described in a four-page bulletin recently issued by National Fuel Conservation Co., Inc., White Plains, N. Y. The Heat-Lock is a device which is adaptable to existing installations, and is stated to be a "must" with new installations.

The new device slows the speed at which hot gases leave the boiler or furnace, yet causes the gases to churn rapidly internally, giving a more thorough scrubbing action on all heat transfer areas. This increases radiation and temperatures within the combustion area increase normally between 300 and 400 deg, giving more thorough combustion and less soot.

A recommended draft adjustment of .01 in. over the fire will give a high CO_2 reading according to tests run by the manufacturers in their laboratories. It is pointed out that with conventional equipment that .01 in. is not a safe adjustment for draft over the fire whereas with the Heat-Lock it is a common practice and is not only perfectly safe but permits a quicker chimney warm-up. AA 115

Industrial Plant Air Filter

THE MINE SAFETY APPLIANCES CO., Pittsburgh, announces a new type of air filter which removes particles as finely divided as tobacco smoke, which range from .05 to .1 of a micron.

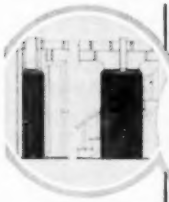
Simple in design and construction, the filter, called the Ultra-Aire Space Filter, offers 46,000 square in. of filter media in the 1000 cfm size, and is available in air flow sizes of 50, 500 and 1000 cfm. Its effective service life, when protected by a roughing filter, is about one year and a half.

The new filter has many applications where toxic particles are a threat to health or production processes. In hospitals, it safeguards against bacteria and some viruses when they are air-borne in operating rooms, isolation wards, and experimental laboratories. Producers of pharmaceuticals are told that the filter prevents product

No wonder SEQUOIA'S new "CLOSET'EER" is sweeping the nation!

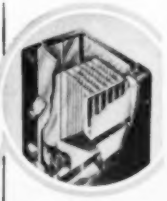
In one furnace all the features preferred by builders and installers alike! Exclusive new shallow depth that saves costly floor area . . . simplifies the entire connection process. Superb performance from a new design burner and heating element. Backed by Sequoia's guarantee of proved trouble-free operation.

In seven competitively priced sizes to meet every heating requirement.



CLOSET'EER DESIGN— Wide face — shallow depth fits alcoves . . . saves closet area, false depth walls. All models AGA'd for zero clearances!

CLOSET'EER INSTALLATION — All controls conveniently grouped on the face . . . every connection within easy arm's reach. No contortionists needed!



CLOSET'EER PERFORMANCE — New T-head multi-port burner and wafer section heating element assures constantly efficient warm air circulation. Models from 65,000 to 200,000 BTU . . . for natural, mfd. LP gases.

CLOSET'EERS are made exclusively by the

SEQUOIA MANUFACTURING COMPANY

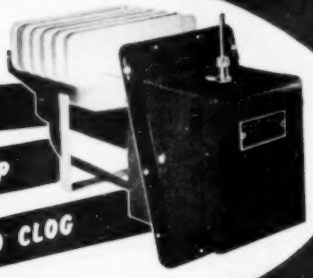
1000 Brittan Avenue • San Carlos, California

America's fastest growing  furnace manufacturer

EXCLUSIVE

***Auto-flo* PRINCIPLE GUARANTEES YEARS of TROUBLE-FREE SERVICE**

Auto-flo "100" **AUTOMATIC HUMIDIFIER**



NEW, BETTER, SIMPLER Principle of Operation!

Large size orifice replaces commonly used float valve. No moving parts to adjust, stick, or wear out in the revolutionary Auto-Flo "100" Automatic Humidifier. Quickly, easily installed in any type of warm air furnace—only one opening to cut. More humidity with high quality Auto-Flo ceramic plates that give better results than any other type plate. No tools required to remove pan or plates for cleaning. Each unit comes complete with evaporator plates, saddle valve, tubing and necessary fittings.

KEEP YOUR PROFITS

When you sell and install Auto-Flo. No "dribbling" away of profits in expensive service call-backs.

1-YEAR FACTORY Guarantee ON ALL PARTS

AUTO-FLO CORP.
13526 Fenkell, Detroit 27, Mich.
Please send me full information on Auto-Flo "100" Automatic Humidifier.

NAME .....

ADDRESS .....

CITY ..... STATE .....

AUTO-FLO CORP.

13526 Fenkell Ave. Detroit 27, Mich.

Coupon on page **113**

contamination in processes where air conditioning is vital to manufacturing.

The new unit can be made a part of an air conditioning system, either in the intake or exhaust. It is described in the new Bulletin No. CU-1, just issued. AA 116

Oil Fired Equipment Booklet

JUST OFF THE PRESS is an 8-page booklet on the complete line of oil fired equipment manufactured by Electrical Burner Manufacturing Co., Rutherford, N.J. It includes complete specifications and dimensions of the various types of oil burner models along with their line of water heaters, warm air conditioners and boilers. AA 117

Janitrol Forced Air Heating System Bulletin

A COMPREHENSIVE BULLETIN describing the Janitrol "Save-Way" air system for quality residential forced air heating with low installation costs was recently released by Surface Combustion Corp., Toledo, Ohio.

Prepared in answer to a demand for literature on this new system which provides the comfort advantages of continuous air circulation together with the economy of small duct installation, this illustrated bulletin describes the use of the Save-Way system with various types of gas and oil forced air furnaces as well as in various types of homes. By using 4 in. round ducts in standardized forms with shop-made fittings, the Save-Way system offers installation economies up to 35 per cent in new homes, compared to conventional rectangular duct systems, according to the manufacturers, with savings in steel as well as in installation labor. AA 118

Domestic Attic Ventilation

A NEW ILLUSTRATED BOOKLET shows how attic ventilation of homes brings cooling relief from summer heat. Drawings and photographs give a simple explanation of the principles of low-cost home cooling. This informative booklet also describes easily installed package-type attic fans and covers their adaptability to any style and size home. The booklet is offered by Hunter Fan and Ventilating Co., Memphis, Tenn. AA 119

Stainless Steel Fastenings Catalog

A 20 PAGE CATALOG has just been issued by the Star Stainless Screw Company, Paterson, N.J. It provides detailed product specifications to aid in selecting and ordering stainless steel fastenings.

Illustrations of the products in each classification quickly identify the various items. Specifications such as measurements and materials are clearly listed in easily read chart form. The product categories include all types of screws, nuts, bolts, washers, pins, studs, rivets, nails, hinges, chains, shaft keys and wire rope.

On four pages devoted to stainless steel specialties, diagrammatic drawings are provided to describe fully the various types of fittings available.

The booklet offers valuable information on the structural content of each type of stainless steel and the suitability each has for bending, stamping, machining, weld-

Coupon on page **113**

ing, and if best results are obtained when worked while hot or cold. It gives the manner in which the metal can be purchased such as sheet, strip, plate, bar, rod, forging billets, tubing, cold drawn and structural shapes. AA 120

50,000 Btu Input Heating Unit

ROYAL HEATERS INC., Alhambra, Calif., has issued a one-page, two-color bulletin describing their new Royal Jet-Junior heating unit, designed to bring central heating to low-cost homes. The Jet-Junior occupies a total floor area of less than 2 sq ft. Bulletin includes complete diagrams and gives four typical framing installations of interest to the average new home owner or builder. AA 121

Sheet Metal Fabricator

A NEW ILLUSTRATED CATALOG, No. 10-A, describing the Wales Sheet Metal Fabricator is now available. This Fabricator Catalog features hole punching, notching and nibbling, plus the Wales patented Hydra-New-Matic Head, "Quick Change" Holder, and the No. 3½ Holder that punches round and shaped holes up to 3½ in. in diameter. Large illustrations, clear descriptions and complete specifications add to the catalog's usefulness. AA 122

Domestic Type Window Fan

A NEW FOLDER is just off the press describing the "Fresh-Air Maker Fan" manufactured by Schwitzer-Cummins Co., Indianapolis. This useful device is primarily intended for use in casement windows, either steel or aluminum, but is so designed as to make a fan for sash windows, or as a portable unit in reception rooms, offices, stores, etc. The fan's air delivery is rated at 2,560 cfm at its high speed.

The fan is provided with a large handle for better portability, a convenient 2-speed switch, efficient screen guards, mounting clips for hanging the fan in casement windows, and rubber feet. AA 123

Aluminum Mill Products

REYNOLDS METALS CO., Louisville, Ky., is now distributing the 1952 issue of the brochure, "Reynolds Aluminum-Mill Products".

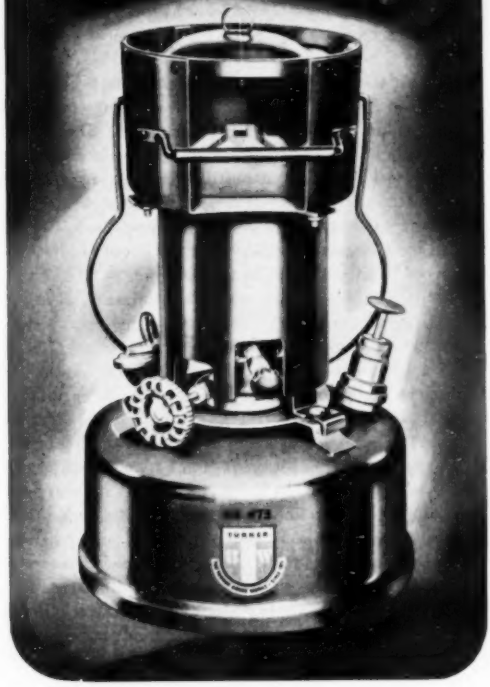
This 12-page, 3-color catalog outlines the advantages of the wrought aluminum alloys, and contains an alloy selection guide as well as informative material on fabricating and finishing. Other helpful literature available is listed in the brochure. AA 124

Square Diffuser Bulletin

A NEW FOLDER is available from W. B. Connor Engineering Corp., Danbury, Conn., describing their Type KP "Kno-Draft" Square Diffuser, featuring over-lap style construction or T-bar installation. These new diffusers are stated to incorporate such advanced engineering characteristics as built-in volume control, precision air patterns and sturdy construction. AA 125

TURNER

Quality Since 1871



No. 475 Low Pressure
TINNER'S FIRE POT

● Smokeless . . . sparkless . . . sootless! Complete with Turner's exclusive "Carburetor Control" for more perfect combustion; also a flame control — for exact heat desired — which automatically cleans the orifice. Construction assembly permits quick, easy accessibility . . . windshield, top-plate, and bail handle are one unit, and can be lifted from tank by loosening one wing nut. Burner coil is made of extra-heavy seamless steel tubing, protected by sturdy outer jacket that maintains heat without overheating; can be generated and used in heavy wind. Fuel capacity — one gallon; burns for 9 hours on one filling. Get details, too, on Turner's popular Plumber's Fire Pot (No. 275); also Turner's complete line of Blow Torches.

See Your Jobber

THE TURNER BRASS WORKS

SYCAMORE ILLINOIS

Since 1871

DON'T THROW ME AWAY! I'M GOOD FOR MANY MORE YEARS IF YOU FIRE ME WITH A

NEW SUN-RAY

SERIES "VS"

VERTICAL FLAME BURNER

The New Addition to the Great Sun-Ray "Shell" Head Burner Family

1 — Burns less oil — 500° to 600° F. hotter flame.

2 — No combustion chamber required.

3 — No complicated hearth to build.

4 — No moving parts in combustion area.

5 — Burns catalytic oil cleanly and completely.

6 — Delivers heat directly to boiler sections or furnace heat exchangers.

7 — Built-in delayed action oil brake

8 — Easy to install — requires less service.

9 — Tops in consumer appeal.

Famous the World Over for Quality and Economy

SUN-RAY FULLY AUTOMATIC OIL BURNERS

SUN-RAY BURNER MFG. CORP.

139-34 QUEENS BOULEVARD • JAMAICA 2, N.Y.

Washington Letter —

(*From page 30*)

tures of the people with whom we must associate. Russell has character, has a high-level code, and leaves no doubt about his integrity.

You know he will do it when he says that he will punish the grafters, crooks, and traitors; and hold the Agency heads responsible for what happens in their units. He does not believe in destroying the reserve powers of the States; believes utterly in Constitutional Government; is against the FEPC, because it would abolish all fundamentals of Anglo-Saxon jurisprudence. He is not opposed to any voluntary FEPC. He was one of the first men in the Senate who said the Supreme Court could come only to one legal conclusion about the steel seizure, and that was to deny its validity. He is utterly against the doctrine of inherent powers and holds that the Executive is obliged to execute laws made by Congress. He doesn't believe the status of Commander-in-Chief gives power to take private property. He says inflation must be stopped; and thinks that soon we must have some sort of labor-management relations court. He does not favor the idea of an Atlantic Union. He feels, on the whole, that General MacArthur was right. He recognizes the enormous waste in military procurement, would not raise taxes, is not in favor of compulsory insurance, doesn't want Government in business, doesn't want Federal control of state education, believes in the rights of the States and believes in farm price supports under certain circumstances. Russell has 300 delegates pledged to him; they will remain solidly behind him until he releases them. He will go to the Democratic Convention with the greatest number of delegates. The Texas Democrats, sixty-two delegates, uninstructed, are outspokenly favorable to Russell. He thinks our greatest problem is to survive, and that the crisis will come by 1954. This also is the test year, in the judgment of General Omar Bradley. Bradley thinks in military terms, and Russell knows the farm economy is shrinking and that it takes about two years for the effect to touch the rest of the economy. He apparently feels that any enemies we have will strike when we have an economic upset. The upper level Democrats would like to see a ticket with Russell for President and McMahon for Vice President, or Russell and Douglas of Illinois. Senator Johnson, of Colorado, politically a cautious gentleman, first was for Kerr, then for Barkley, and finally settled as campaign chairman for Russell. Senator Russell calls himself a Jeffersonian Democrat.

W. Averill Harriman

William Averill Harriman, 62, is the son of E. H. Harriman, the greatest railroad genius this nation has ever known. His grandfather was a Long Island clergyman. He has been married twice, has two married daughters, and is tremendously wealthy. There is no reason for Harriman's eagerness to give public service except that restless drive to do something to justify himself, and probably, a little taste for some conspicuity. He is a curious person. Tall, rather shambling, usually garbed in wrinkled and worn clothes, slender and not

RANDALL PILLOW BLOCKS

Control Lubrication

Controlled lubrication to all parts of the bearing surface is assured by an exclusive Randall feature. Porous graphite feed plugs extend through the wall of the bronze bearing and by capillary action feed oil from the "deep well" reservoir to the graphited grooves of the bearing. These grooves distribute the oil to all parts of the bearing surface. Heat increases the capillary action of the graphite thus increasing flow of oil and assuring proper lubrication at elevated temperatures. When heat subsides, flow of oil is automatically reduced.

Randall pillow blocks have a reputation for extremely quiet operation, extra long life and trouble-free operation. Completely self-aligning, most styles can be mounted in horizontal, vertical or inverted positions and are available for light, normal or heavy duty on shafts from $\frac{1}{2}$" to $3\frac{15}{16}$" inclusive. Remember, there's a Randall that's right for every type application.

For more detailed information write for catalog No. 109 today or send your specifications.

BRONZE BAR STOCK
BRONZE BUSHINGS
PILLOW BLOCKS
SHEET LUBRICATOR

Randall

GRAPHITED BEARINGS
THRUST WASHERS
BABBITT METALS
SAFETY COLLARS

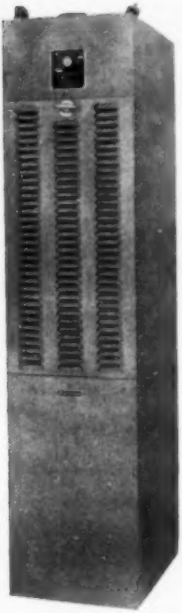
RANDALL GRAPHITE BEARINGS, INC.

1000 S. Greenlawn Avenue • Lima, Ohio

JOHN ZINK JZ

HEAT MAKERS

for your Customers



Easy to Sell
Easy to Install
Standard Units
Trouble free
Heating
AGA Approved

Burn All Gases

CENTRAL HEATERS

Upright or horizontal models are available in a complete packaged unit with fully automatic controls. Provide forced, filtered air heating with no attention. All heaters completely assembled and checked at factory. Several sizes available.

Made entirely by John Zink — guaranteed by John Zink.

WALL HEATERS

John Zink's new Wall Heaters in louver or radiant type are a smaller more compact heater — designed for installation between 16" centers — recesses well into the wall.

Particularly adapted for heating small, low cost homes, extra rooms, garages, utility rooms and basements.

Attractively finished in ivory color that will not chip or crack.

Efficient Units you can sell at a profit. Write for specifications and discounts.

JOHN ZINK CO.

4401 So. Peoria **TULSA, OKLA.**

exactly strong looking, what strikes you about him are his large dark eyes and his thin face, corroded by curious lines of weariness and disillusionment. He looks as though he had lived too swiftly, too much. Those who know him well like him. He has always had the difficulty of an extremely wealthy man, of being set apart by his great wealth. Apparently all his life he has had a desire to do something unusual. It seems to be a characteristic of his family. Aside from his tremendous genius in making railroad empires, his father was a really great musician and had an intense love for music. His sister married a sculptor, and for a considerable time lived in China. There is considerable of the elder Harriman in his son. He is definitely a personality with the conflicts possessing a person with artistic qualities and ideals. There is no doubt Harriman is inhibited by the conditioning which came with the walls built around him by his wealth. He is sensitive, skeptical, and yet you feel he is hopeful that he will find some ultimate good. He is eager to do things for people, and yet is always restrained because of the abuse which his kindliness has suffered. In many ways, Harriman is an ascetic. The shadow of it is in his face. He used to speak jerkily, unsurely, but recently has taken training and is much more assured. He would like to be President, and really thinks he can be elected. He doesn't want to be Vice President, but would not mind being the Secretary of State. The City Bosses undoubtedly are using him as a lightning rod, and as a potential gold mine for exploitation by the Party.

Other Potential Candidates

Federal Security Administrator Ewing is a lawyer who hails from New York State. He is one of those people who fundamentally believe in radical theories, but who also utilizes his beliefs to bring him the profit that goes with ambition to become politically powerful. The people in his vast organization don't entirely trust him with all the obligations of his duties. He is infinitely more sophisticated than Kefauver or Harriman. But he is inferior as a political philosopher to the staunch and steady and clear-minded Russell, has less personality than Harriman. Ewing is one of those pretentious persons who can kid himself, and then can kid others as he has deceived himself with his social and political and economic ideas and philosophies. It would be a miracle if he could kid the City Bosses into permitting his nomination.

Senator Brien McMahon, Senior Senator from Connecticut, has been Assistant Attorney General of the United States, is proud of being the author of the McMahon Act for the Control of Atomic Energy. He is what we used to call Jesuitical, intellectually and in practice. He is particularly notable in the Senate for the violence of his attack on Senator McCarthy.

Senator Robert Sam Kerr, of Oklahoma, is a lawyer, a drilling contractor, and an oil multi-millionaire. He was the keynoter in the Democratic National Convention at Chicago in 1944. He was born in a log cabin, and he will have a log cabin at Chicago as his headquarters.

Kentucky has instructed its twenty-six delegates to vote as a unit, until released, for Vice President Alben Barkley. Barkley's chances chiefly depend upon the unexpected.

Problems of the Next President

The Democrats tell us they know the next President will find money scarcer, some deflation, and far more labor trouble. They think he will be obliged to permit the workers to get more wages but that the increase will not give greater buying power. They believe retail workers, white-collar workers, and farmers will have less income. Truman has not less than $70 billion to spend, and probably as much as $100 billion, but the next President will have much less. Our Democratic friends tell us the next President may have to give up some powers to the states and modify the present assumption of Presidential powers, either those recently grabbed without Constitutional warrant, or those given for the emergency. They are confident the next President must do much less law-making and ruling by Executive order, and his Agencies will have to do much less lawmaking by directive and regulation. They regard it as certain there will be some decentralization as the result of the vociferous insistence in all parts of the country.

The Democrats, who hold their Convention after the Republicans have selected their candidate, unquestionably will attempt to tailor their candidate to meet the contest with the Republican candidate. If Eisenhower is nominated, they will have a different candidate than if Taft is nominated.

Oh, yes! — How do the City Bosses get control of the Convention delegates? Long ago they set out and secured the control of those in certain key centers who influence the choice of the delegates. Although the delegates themselves generally do not know it; those who send them to Chicago, in various ways are assured enough power to induce the delegates to do and to vote as they so wish.

New Book on Exhaust Hoods

For information on exhaust hood design, Exhaust Hoods, by J. M. Dalla Valle is a primary source of data.

Increased emphasis on industrial health hazards in plants where harmful and dangerous dusts, vapors, gases or fumes are generated, has resulted in a demand for accurate design of exhaust systems, of which the hood is a most critical part. Five chapters cover actual hood design for various types of applications, booth-like structures, grille openings, woodworking machinery, examples of hood design calculations, and the essentials of good construction. Other chapters cover the flow of gases, velocity characteristics of canopy hoods and criteria for determining hood effectiveness.

Sample problems, with the solutions worked out in detail, is one of the commendable efforts of the author to bring understanding to the average reader. 141 page book with 127 illustrations and 30 tables, price $3.50 from the Industrial Press, 148 Lafayette St., New York 13, N. Y.

INDUSTRY ITEMS

THIRTY WARM AIR HEATING DEALERS from Murfreesboro and the surrounding area were present May 17 for a meeting on Armstrong furnaces and merchandising aids, held by Murfreesboro Supply Co. at the Polk Hotel in Murfreesboro, Tenn.

Lewis McCauley, company sales manager, discussed the importance of merchandising and complete product knowledge in today's retail furnace selling. He also commented briefly on the various services which Murfreesboro Supply offers its customers.

H. G. Hays, Armstrong Furnace Co. assistant sales manager, described the design features of the Armstrong line of warm air furnaces, covering especially Armstrong's new gas hi-boy and horizontal furnaces.

C. L. Brooks, Armstrong district sales manager, then discussed Armstrong's national advertising program for 1952, pointing out the merchandising aids available for local use by dealers in connection with the national advertising program. He also told of Armstrong's dealer identification material, special selling campaigns and consumer sales presentation.

H. L. Ganoe, Murfreesboro Supply general manager, summarized the various points covered and closed the meeting.

THE APPOINTMENT of Paul Ozanne as manager of the sales and economic analysis division of Minneapolis-Honeywell's marketing research department was recently announced by Fred Haviland, Jr., director of market development.

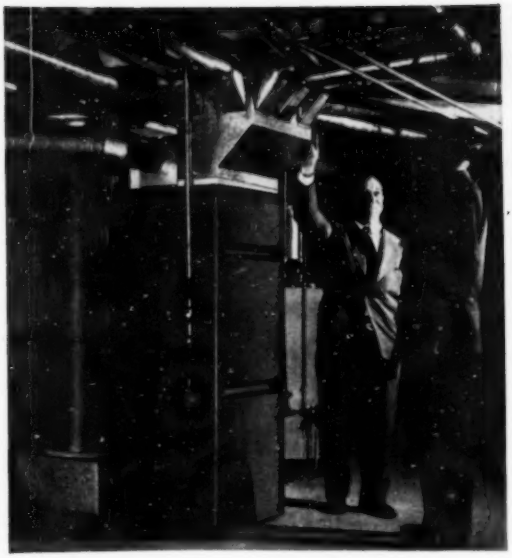
Ozanne, a native of Racine, Wisc. and graduate of the University of Wisconsin, has spent more than a decade in the statistical research field.

TINNERS SUPPLY CO., Nashville, Tenn., has recently been appointed as a distributor for the Armstrong "Indoor Sunshine" line of warm air heating equipment in the middle Tennessee area, according to an announcement by L. G. Hickok, Armstrong executive vice president.

"Tinners Supply has distributed sheet metal and roofing supplies to the middle Tennessee region for many years, but they have not previously handled furnaces," Hickok stated. "They have now set up a complete warm air heating department under the supervision of William J. Hobbs, and not only maintain a complete stock of gas, oil and coal furnaces, but also provide sales and engineering assistance for warm air heating dealers."

In addition to Armstrong furnaces and gas and oil conversion burners, Tinners Supply will stock a full line of registers, controls, sheet metal, fittings and sundry warm air heating supplies for service to dealers.

FRANK P. KIRK, Manitowish, Wis., has rejoined the Harvey-Whipple field organization, where he will be factory representative for the entire state of Wisconsin and eastern Minnesota.



®Janitrol "Save-Way" AIR SYSTEM

4" ducts mean big savings in labor and material . . . ideal for perimeter heating

JANITROL GAS OR OIL-FIRED UNITS FOR CAC OPERATION USING 4" DUCT

Get a bigger share of the new house market, write for Save-Way Design Manual.

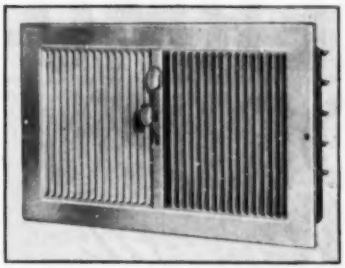
SURFACE COMBUSTION CORPORATION

2385 DORR ST. • TOLEDO, OHIO

AirControl

REGISTERS and GRILLES

are the finest you can use on your Heating and Air Conditioning Systems



With these registers you are assured of perfect control of the air stream — both vertical and horizontal.

Adjustable vertical fins control the air stream on the horizontal plane.

Air Flow Valve controls the vertical direction of the air. Valve can be pre-set so that it will always open at the correct up or down deflection.

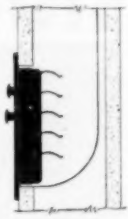
The Push Button operator opens or closes the register with a touch of the finger.

Air Control Dual Control Registers come in a complete range of sizes to fit your every installation need.

Assure yourself and your customers of the most satisfactory operation of your installation by using Air Control Dual Control Registers.

AIR FLOW VALVE

The Air Flow Valve functions perfectly in any type of stackhead, either square or round.



OVERHEAD SYSTEMS

When duct comes down from attic install register in regular position — register does not have to be turned upside down.

THE AIR FLOW VALVE

This unique valve is the secret of the efficient control of the air stream.

The valve extends far enough into the duct to assure uniform air distribution over the entire face.

When closed, louvers overlap and seal at two points. This helps prevent whistle and noise.

Curved form of the louvers aid air movement through the register and helps keep resistance down.

Linkage bar is in the center of the valve thus providing equal pressure on each end of the louvers.

Stop below push button can be set for any desired air deflection.

Write now for your copy of the New Air Control 52-ac Catalog

AIR CONTROL PRODUCTS, Inc.

COOPERSVILLE MICHIGAN

Kirk is well-known in Wisconsin and northwestern heating circles, having represented General Automatic, and prior to that was for several years factory representative for Harvey-Whipple, Inc., Springfield, Mass.

J. C. ZANCKER, a director of Wilder Manufacturing Co., Inc., Carmel Valley, Calif., and distributor of Wilder portable slitting shears, announced appointment of T. S. House as Wilder representative in Ohio, Indiana, Kentucky, Michigan, and the state of New York west of Albany.

House, president of T. S. House & Co., Cleveland, has been connected with the sheet metal and heating industry since 1927, working successively as a mechanic, a dealer, jobber, manufacturer and finally in his own business as manufacturers' representative.

House was widely known for many years as sales manager for Niagara Furnace Division of Forest City Foundries Co., and later as sales manager with Richmond Radiator Co., New York.

SIXTY DEALERS in the New England area recently attended a full day meeting on Mueller Climatrol equipment at the Somerset Hotel in Boston. The meeting, which was devoted to product and sales promotion at the dealer level, was conducted by O. J. Ress, Mueller's research director and John Reock, manager of advertising and sales promotion. Harold Smith, Eastern district sales manager served as master of ceremonies.

It was announced that Brody Distributors, South Boston, Mass., were appointed as Mueller Climatrol distributors in the Boston area. The afternoon portion of the meeting was devoted primarily to service, installation, and modern trends in heating systems. A buffet dinner was served at the hotel. During the evening, the program was devoted to advertising, sales promotion and merchandising.

H. RANKIN GRANT COMPANY, Bangor, Me., has been appointed a distributor of Armstrong warm air furnaces, according to an announcement received from L. G. Hickok, Armstrong executive vice-president.

"The Grant organization will keep a complete selection of Armstrong furnaces available for quick service to heating dealers," Hickok stated. "They also maintain complete stocks of furnace pipe, fittings, controls and miscellaneous supplies, and will offer complete engineering and sales assistance to the retail dealer."

Armstrong Furnace Co., with two factories in Columbus, Ohio and Des Moines, Iowa, manufactures a complete line of warm-air furnaces for firing with oil, gas or coal, as well as oil and gas conversion burners.

SEVENTY WARM AIR heating dealers from central Ohio assembled at the Columbus plant of Armstrong Furnace Co. recently to attend the annual sales meeting of the Ohio Furnace Co.

Adam J. Pataky, general manager of Ohio Furnace Co. pointed out that engineering, sales and service as-

sistance is available to the dealer in addition to all materials required for installing a heating unit. He emphasized the importance of adopting and following a sound merchandising plan both for the development of prospects and the closing of furnace sales.

CLARENCE A. NOLPH has been named manager of the newly-established Syracuse branch office of Carrier Corporation which will serve Syracuse and the upstate New York area east to Albany, north to the Canadian border and south to the Pennsylvania line. Nolph comes to Syracuse from Carrier's Rochester branch which formerly covered the entire upstate area outside the metropolitan New York district. The Rochester branch now has the territory west of Syracuse. Nelson E. Sheldon continues as manager of direct sales in the Rochester office.

WILLIAM BYNUM, executive vice president of Carrier Corporation, Syracuse, N.Y. announces the appointment of J. A. Gazelle as western sales manager, with headquarters in Los Angeles. A new, modern office and shop building in Los Angeles has recently been completed, providing facilities for the warehousing of Carrier products to insure quick delivery to west coast markets.

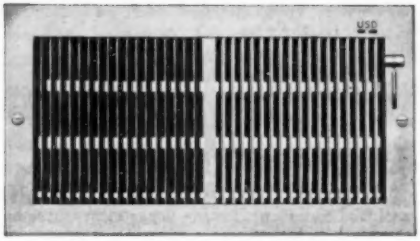
James C. Shea is dealer district manager at the Los Angeles office and Robert F. Allen is dealer branch manager in San Francisco.

ARTHUR P. HALL, vice president in charge of public relations and advertising for Aluminum Company of America, Pittsburgh, announces the appointment of Frederick C. Stakel as advertising manager. He is a graduate of Ohio State University and the New York University Graduate School of Business Administration.

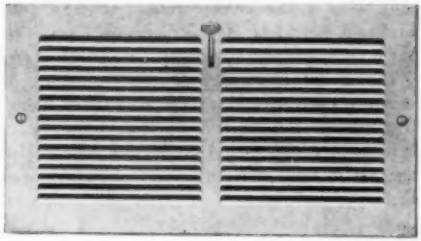
AT THE 30TH ANNUAL MEETING of the Copper & Brass Research Association, held at The Homestead, Hot Springs, Va., the following officers were re-elected: president, W. M. Goss, executive vice president, Scovill Manufacturing Co.; vice presidents: M. W. Acker, director, Western Brass Mills, Metals Division of Olin Industries, Inc.; R. C. Diehl, president, Chase Brass & Copper Co.; J. A. Doucett, vice president, Revere Copper and Brass Inc.; A. R. Zender, executive vice president, Bridgeport Brass Co.; treasurer, F. L. Riggin, president, Mueller Brass Co.; manager, T. E. Veltfort; and secretary, B. B. Caddle.

The following were elected vice presidents: W. W. Sieg, president, Titan Metal Manufacturing Company; F. R. Slagle, vice president, The Miller Co.; and A. C. Wheeler, president, The Seymour Manufacturing Co.

MERCER G. FARRAR, chief engineer of the Pyrofax Gas Co., New York, a division of Union Carbide and Carbon Corp., was recently honored with the Distinguished Service Award of the Liquefied Petroleum Gas Association at the organization's annual convention and trade



No. 4432 Aire-Flex Register, flexible fins and multi-louver valve. Also furnished with single valve (No. 4032).



No. 7032 Aire-Flex single valve Register, adjustable fins.

For fine registers and grilles for all purposes — gravity, forced air, or air conditioning— you can depend on Auer. Our line is COMPLETE for all your needs. Auer registers are made ONLY by The Auer Register Co.

Ask for Auer Register Book showing all models — or for bulletin on perforated grilles.

THE AUER REGISTER CO., 6600 CLEMENT AVE., CLEVELAND 5, OHIO

Canadian Distributor, Marchand Furnace, Ltd., Tilbury, Ont.

Auer REGISTERS

& GRILLES for AIR CONDITIONING & GRAVITY

It's the LOW DOWN DIRT trapped by WILSON'S HAIR FILTERS that GUARANTEES LONGER LIFE

In Wilson *Hair* Filters the entire dust-holding capacity is completely utilized. This means, *no surface dust stopping only*, but Full-Depth Dust Trapping at its best . . . and many extra months of filter life.

The *reasons* are so simple:

1. The hair media in Wilson *Hair* Filters act in the same manner as Mother Nature's proven way of filtering the air you breathe. It's the *hair* that cleans the air . . . more easily, more effectively, more economically.
2. The multi-directional distribution of the hair in Wilson *Hair* Filters literally invites all dust and dirt to come in and be trapped throughout the entire filter interior.
3. Most brands of air filters require oiling on their inlet surfaces. This stops dust prematurely, loads up the incoming air side and materially shortens filter life.

Wilson Hair Filters are not oiled on the inlet side. Instead, they receive an even distribution of mineral oil *on their outlet surface*, which:

(a) augments the already amazing ability of the hair itself, to catch and hold dust, and—

(b) builds an impregnable barrier which halts dust and dirt after reaching the furthermost practicable penetration point.

WILSON & CO., INC.

(Air Filter Division) 4100 South Ashland Ave., Chicago 9, Ill.

Wilson Hair Filters are another quality product of Wilson & Co., world-famous for meat products, sports equipment, pharmaceuticals, hair products, etc.

The famous Edgeseal, the original *Hair* Filter with the patented self-sealing edge.

The popular Honeycomb, the dressed up *Hair* Filter that is so easy to handle.

Save delay. Save dollars. Save doubt. Send for FREE sample with details and prices.

show held at the Palmer House, Chicago. Walter F. Verkamp, president of The Verkamp Corp., Cincinnati, and a past president of LPGA, made the presentation.

The award is given only once each year for outstanding contributions to the association and the LP-Gas industry. It carries with it an honorary life membership in LPGA. In 1951, Farrar was elected a life member of the American Society of Refrigerating Engineers.

FRANK DOBBE, vice-president in charge of sales for Huck Manufacturing Co., announces the promotion of Robert Looker to the position of sales manager and appointment of Donald Stamy, formerly an engineer with Chrysler Corp., as assistant sales manager.

WISCONSIN APPRENTICES recently found out how the products they install are made. About 25 of the future journeymen, under the sponsorship of the Wisconsin Schools of Vocational and Adult Education, recently toured the factories of The Trane Company, La Crosse, Wis., and saw how air conditioning, heating, ventilating and heat transfer products are put together.

The group was conducted through four plants by F. O. Russell, manager of the firm's Specialties Sales Department. Inner workings of Trane products were explained and manufacturing processes were traced from receiving room to the shipping department.

In charge of the visiting apprentices was G. S. Strombeck, Coordinator, Vocational and Adult Education, of Racine, and Marcel W. Huguet, Instructor, of Green Bay, Wis.

THE APPOINTMENT OF George W. Brown as executive engineer has been announced by the Wagner Electric Corporation, St. Louis. Brown has been with the company since 1926, having joined the company as a student engineer following his graduation from Ohio University. He was assigned to the engineering department where he specialized in the development, design, manufacture and application of fractional horsepower motors.

B. J. LATTNER has been elected executive vice president and general manager of Century Engineering Corp., Cedar Rapids, Iowa. The announcement was made concurrently with the firm's introduction of a new line of automatic oil and gas fired heating equipment by E. J. Lattner, president.

The promotion of these executives and the introduction of a complete new automatic heating equipment line marks still another stride in the firm's stepped-up sales activity through distributor and dealer channels.

THE ROBERTSON HEATING SUPPLY CO., Alliance, Ohio, recently held a series of schools at Canton, Ohio with a meeting for the Canton Branch. This was continued on successive nights with meetings for the Youngstown, Alliance, Steubenville and Zanesville branches. In all, 378 dealers participated. The principal speakers at

these meetings were C. L. Grandstaff and E. H. Morris of the C. A. Olsen Mfg. Co.

The topic for discussion was "Oil Burner Installation and Service". The talks were supplemented by "live" demonstrations using cut-down units which were fired. Tank locations, nozzle sizes and spray angles, electrode settings, control locations and service, and burner adjustment were covered.

L. J. Wing Mfg. Co., Linden, N. J. recently held "Open House" for all their employees and their families and friends. A feature of the occasion was the presentation of service awards by H. S. Wheller, president of the company, who received an award himself, having just completed 50 years with the firm. In addition to the service award presented to Wheller by C. H. Smith, secretary, he was also the recipient of many gifts from employees and from the officers.

A system of automatic ash disposal which supplements existing burner equipment was discussed by Neil H. Gebhardt, president, Gebhardt Coal and Coke Co., Erie, Pa., at the tenth annual Anthracite Conference, Bethlehem, Pa.

Development of a closed vacuum system will eliminate dust in the basement and in the driveway. A streamlined truck on which is mounted a large vacuum tank and a fan powered by the truck motor has been developed to convey mechanically ashes from the home.

A light, flexible hose carried on the truck is connected to a basement tube terminal and vacuum is used to pull the ash from the basement receptacle into an air stream and then deposited in the truck-mounted vacuum tank.

Cited as advantages of this new equipment: (1) calls for mechanical repair service are unnecessary; (2) system is clean inside and out; (3) ash man does not have to enter the basement; (4) operation is completely automatic; and (5) because the power plant is on the truck, the single investment in power will service multiple installations.

ANNOUNCEMENT WAS MADE recently by the American Steel Warehouse Association, Inc., Cleveland, of the election of Harold B. Ressler as chairman of the executive committee to serve for the 1952-53 term. He is a director of the Association and had been a member of the committee for some time. He was its first president in 1934-35.

Ressler is chairman of the executive committee of Joseph T. Ryerson & Son, Inc., large steel warehousing organization operating plants in 15 cities over the country and maintaining executive offices in Chicago. He is on the board of both Ryerson and the Inland Steel Company, Chicago.

In his almost 48 years of service with Ryerson, Ressler has served in many capacities. He managed the company's plant in St. Louis for 15 years beginning in 1914, was named general manager of sales in 1929, and elected

vice president in charge of sales in 1932. For a period of 10 years beginning in 1934 he made his headquarters in New York, serving both as manager of the New York plant and supervisor of the company's plants at Boston, Philadelphia and Buffalo. He was elected first vice president in 1950, and chairman of the executive committee Jan. 1, 1952.

HARRY POTTER has joined the Field Control Division, Mendota, Ill., manufacturers of Field Barometric Draft Controls, as factory sales engineer. Potter was for many years associated with a theatre chain in charge of the building, equipping, staffing and preparation of new theatres in the Chicago area. Prior to that, he was in charge of personnel training for a Chicago department store, conducting a school for service personnel.

J. M. PURDUM has been promoted to the post of advertising manager at the Perfection Stove Co., Cleveland. Well-qualified for his new position, Purdum has had many years experience in the advertising and sales fields. He is a member of the Cleveland Advertising Club, the Industrial Marketers of Cleveland, and the National Industrial Advertisers' Association.

THE APPOINTMENT OF Oliver De Pew, Jr. as general manager of the Pioneer Furnace Co., Los Angeles, was announced recently by Ray Polverini, company president. De Pew's principal responsibilities will be the research

and development of new units for the heating field that will supplement the company's present line.

His business experience includes 16 years of designing and supervising the fabrication of heaters for aircraft and eight years as vice president and sales manager for another heating concern where he designed, engineered and sold a complete line of new floor furnaces and wall heaters.

EDWARD F. POPE, for many years associated with Carrier Corporation, Syracuse, N. Y., in sales management, has been appointed vice-president and general manager of Carrier Engineering, Ltd., with headquarters at Toronto.

Associated with Carrier since 1934, when he joined the staff at the Chicago office as business manager, Pope came to Syracuse in 1939 as assistant to the late E. T. Murphy, then vice-president in charge of marketing.

THE BETTER HOMES BUREAU of the Westinghouse Electric Corp., Pittsburgh, has just released a new 28-minute, full color film designed to be shown to social and service clubs, professional groups, home economics students, builders and home owners. The film, entitled "Better Than Kings", has as its theme the many services rendered by electrical equipment used in the home to make today's family kings of their domain. Among the equipment shown for the modern home are electrical devices to make the heating plant safe and to control the tempera-

Bayley VENT SETS

Engineered for
"PACKAGED"
AIR HANDLING

★ *ADAPTABLE*
★ *EFFICIENT*
★ *ECONOMICAL*
★ *CONVENIENT*

Architects, engineers, contractors highly recommend BAYLEY Vent Sets for applications requiring small or medium capacity. Attractive modern designing make these compact "packaged" units ideal for any exposed installations — indoors or out. A full range of sizes and self-contained drive selections provide exactly the right installation for any air requirement.

WRITE TODAY for the new Bayley Vent Set Bulletin.

BAYLEY BLOWER COMPANY

6602 W. Burnham St. **Milwaukee 14, Wis.**

"Bett-Marr cuts 550 more 16C ells an hour"

Says a Minneapolis sheet metal boss. "In fact, we now cut all ductwork pieces 6 to 12 times faster than by hand with the BETT-MARR saw."

BETT-MARR cuts 50 to 70 stacked galvanized sheets at speeds up to 15 inches per minute. This 14-inch ball-bearing band saw cuts metals, plastics, wood, iron and steel castings and forgings.

- Smooth, powerful chain drive with blade speeds quickly adaptable from 125 FPM to 220 FPM.
- Positive blade control. Case hardened guides with carbide back-up bearing assure cutting accuracy.

PRECISION BUILT — Yet it costs little more than a home-workshop power saw.

GET THE AMAZING FACTS. Learn how you can cut production costs with a BETT-MARR sheet metal saw. Write BETT-MARR Mfg. Co. today. (Equipment dealers — write for information on available territories.)

BETT-MARR MFG. CO. HOPKINS, MINNESOTA

This Can't Happen with "National Metal" "ANGLE RINGS!

Insist on

Insist on Angle Rings that are rolled correctly to your specification and avoid trouble and delays. All Rings correctly made to size—with a true circle and 90° angle. Furnished with or without holes. Write for list of stock sizes and discounts.

NATIONAL METAL FABRICATORS

2140 S. Sawyer Avenue **Chicago 23, Ill.**

The Best IN KITCHEN VENTILATION

DRIPLESS GRILLE | **EXCLUSIVE IN *TRADE-WIND* VENTILATORS**

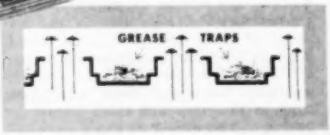
The exclusive design of the grille on TRADE WIND Clipper Ventilators has a twofold advantage —

First — It is unusually attractive in appearance, rectangular in shape and inconspicuously blends into the ceiling.

Second — Each of the bars in the grille is trough-like in construction. These catch and hold any grease that may collect — the only truly dripless grille.

The ONLY ventilator that gives you

- Centrifugal Blowers
- Isolated Motor
- Dripless Grille
- Easier Installation
- Interchangeable Horizontal and Vertical Discharge
- Five-year Guarantee



You can always count on TRADE WIND for performance, quality and convenience

PRICE OFFERS AN INDUCEMENT BUT QUALITY OFFERS A REASON

TRADE-WIND MOTORFANS, INC.

5717 South Main Street, Los Angeles 37, California

ture, humidity and movement of air. The cleaning of the air was accomplished with a small size electronic precipitator.

WILLIAM L. BEALE head of Automatic Equipment Co. has been appointed district sales representative in Albuquerque, N. M., according to R. H. Luscombe, general sales manager, Penn Controls, Inc., Goshen, Ind.

Beale has been associated with the control field for several years as a sales and application engineer and is well versed in the application of controls for heating, refrigeration, air conditioning, gas appliances, pumps and air compressors.

E. M. EVERHARD, general sales manager, Libbey-Owens-Ford Glass Co., Toledo, stated that increased manufacturing schedules have reduced accumulated back orders for the quarter-inch heat-absorbing glass.

The LOF heat absorbing plate in ¼ in. thickness has a transmittance of 76.5 to 79 per cent of average daylight, but it permits only 42 to 50 per cent of total radiation of the sun to pass through it. It has a reduced coefficient of expansion as compared with some of the earlier types of heat-absorbing glass.

APPOINTMENT OF Harrison C. Blankmeyer as scientific director of the Fiberglas Research and Development Laboratories has been announced by Games Slayter, vice president in charge of research, development and engi-

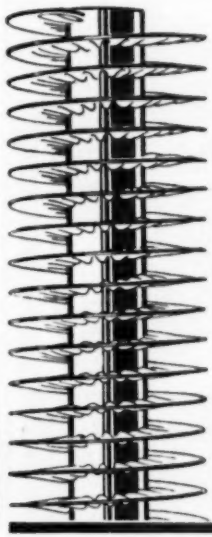
W. A. WHITNEY LEVER PUNCHES
FOR EVERY SHOP AND TOOL BOX

No. 48 Punch

Capacity — 1/4" hole through 16 gauge metal
Length — 8 1/2" Depth of throat — 2"
Weight — 3 lbs. Stock size punches 1/16 to 9/32" by 64ths.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD ILL

AEROFIN



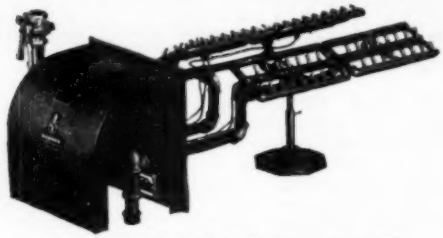
FIN-TYPE COILS
For
Fast, Efficient
HEATING
and
COOLING

Write for Information

AEROFIN CORPORATION
S. Geddes St. Syracuse 4, N.Y.

BARBER BURNERS

For Over 30 Years the Outstanding Conversion Burner



No. 433-B Barber Automatic Burner Assembly

For dependability and efficiency, use Barber Gas Conversion Burners, made in sizes and capacities to fit all types of round or oblong furnaces and boilers. There is no comparison whatever between the average mixer-type gas burner and the Barber *Vacuum premixture*, employing the famous patented Barber Impinged Jet. Equip your jobs with genuine Barber units.

Listed in A.G.A. Directory of Approved Appliances. Send for latest Catalog on conversion burners, all types of appliance burners, and controls.

THE BARBER GAS BURNER CO.

3708 Superior Avenue — Cleveland 14, Ohio

BARBER *Automatic* JET GAS BURNERS

Am-Pē-Co SINCE 1929

"Unipack" Furnace Blower

"DOC" (WITH THOUSANDS OF SATISFIED CUSTOMERS) SAYS:
Quiet as a CAT'S PURR"

FIRST furnace blower made commercially in the Middle West. . . . TWENTY years of service in thousands of homes . . . continuing demand is PROOF of PREFERENCE for QUIETER operation.

It's the operation that counts in a blower. Rugged operation that's "Quiet as a Cat's Purr" and long life are assured when you install the UNIPACK.

AMERICAN MACHINE PRODUCTS CO.
MARSHALLTOWN, IOWA

neering of Owens-Corning Fiberglas Corporation, Newark, Ohio.

Blankmeyer will assist Slayter in coordinating product development and process improvement programs carried out by technologists, technicians and skilled artisans in the research laboratories.

Robert D. Eichman, George Sander and E. A. Price have been appointed to new positions with the Penn organization, according to R. H. Luscombe, general sales manager of Penn Controls, Inc., Goshen, Indiana.

Eichman, who has been appointed sales engineer in the company's New York District Office was formerly engaged in sales and engineering work in connection with equipment installation. George Sander, formerly sales engineer in the New York district has been appointed District Manager. E. A. Price, formerly manager of the New York District office has been appointed Educational Director for the company. Price will be assigned to the main office in Goshen and will handle all phases of sales education as well as the training of new sales personnel.

Perfection Stove Company, Cleveland announces the election of P. T. Skove as secretary-treasurer, effective July 1st. He is being replaced as purchasing agent by W. H. Mansfield, since 1947 a member of the company's purchasing department.

Coming to Perfection in 1909 as head of the cost department, Skove later headed the payroll and purchasing

departments, becoming head purchasing agent in 1932. He has been assistant secretary of the company since 1917 and a member of the board of directors since 1948.

Mansfield came to Perfection as an expediter in the purchasing department, following four years with the U. S. Navy in World War II. Previously he was a field engineer for three years with the Trundle Engineering Co., Cleveland.

ALMOST 1200 YEARS of service with The Kirk & Blum Manufacturing Company were commemorated recently at a dinner when the Cincinnati manufacturer honored 40 employees who have been associated with the firm from 25 to 44 years. Each person received a suitably engraved gold watch.

The longest service record in the group is held by a foreman, E. W. Thiery, who joined the firm on June 1, 1907, just three weeks after it was founded by the late Sylvester Kirk and Richard J. Blum. The fact that the company had just passed its 45th anniversary was also noted at the dinner.

The firm is known for its work in the design, fabrication and installation of industrial dust collecting systems.

MORRISON STEEL PRODUCTS, INC., Buffalo, reports this recent personnel advancement, according to an announcement by Sam Morrison, company president.

John K. Farrar has been appointed sales manager of the Mor-Sun Furnace Division of the parent firm; he previously served as assistant sales manager and sales representative.

CLASSIFIED ADVERTISING

Classified Section: Rates for classified advertising are 10 cents for each word, including heading and address. One inch $5.00. Count seven words for keyed address. Minimum $2.00 for each insertion. Cash must accompany order.

Wanted . . .

WANTED: Shearing any amount — all sizes Galvanized, cold and hot rolled aluminum, Stainless and copper 6" minimum width 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

Write or wire
Los Angeles Sheet Metal Mfg. Co.
901-905 East 9th Street, Los Angeles 21, Calif.
Trinity 4715

WANTED
MANUFACTURER'S REPRESENTATIVES
EXCLUSIVE TERRITORIES ON
GRILLES AND REGISTERS
ADDRESS KEY #858
AMERICAN ARTISAN, 6 NORTH MICHIGAN AVENUE,
CHICAGO 2, ILLINOIS

For Sale . . .

FOR SALE — Well established business doing heating, cooling, ventilating and sheet metal work in a town located in the center of a prosperous midwestern farming area. Annual volume of $120,000.00. The building has over 10,000 square feet of floor space for offices, display room, shop and warehouse. Well kept fleet of trucks. Shop tools and layout are the very best. Inventory is well balanced to handle all types of work being done. Long list of satisfied repeat customers. Will sell building, tools, fixtures, stock, equipment and trucks as a going business. $45,000 cash down payment with financing arranged for the balance. Address Key 897, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

For Sale . . .

Kleen-Master Furnace Cleaner with Le Roi engine complete with thirteen sections conductor and thirty two foot cleaner bag. Almost new. $1000.00. Rees Heating & Engineering, Symmes Rd., Hamilton, Ohio.

Heating and oil distribution business. Central Pennsylvania. Doing consistently over $100,000.00 gross. Net of $12,000 to $18,000 annually. Plenty of potential for much larger gross. Fuel oil storage. Nationally known franchises. Included real estate only built 3 years ago. Residence ranch type 4 bedrooms. Warehouse-sheet metal shop-garages and office under one roof. Operated by present owner for 20 years. An ideal and profitable setup. Must give up on account of health. Address Key 899, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Situations open . . .

Sales Engineer wanted for Pacific Northwest territory by large national manufacturer of automatic heating equipment — all fuels — warm air and, wet heat. Experience selling heating equipment to jobbers or dealers necessary. Please write stating age, experience and salary requirements. Write Key 898, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Salesman Wanted — Outstanding Furnace Manufacturer of a complete line of coal, gas and oil furnaces has an unusual opening for a successful and experienced furnace salesman. The man we are seeking must be a producer and have a background of earning a minimum of $10,000.00 a year, we are not interested in peddlers. He must be willing to spend the majority of his time traveling. To the right type of man we offer an unusual opportunity. Please give full history of your past experience, all answers will be held strictly confidential. Address Key 901, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Agents wanted . . .

Manufacturers' Representatives Wanted! Several profitable territories open for aggressive men to market nationally advertised line of oil and gas-fired residential furnaces priced for the volume builders' market. Downstate Illinois, Missouri, Iowa, Minnesota and Wisconsin. Give detailed qualifications in first letter. Address Key 900, American Artisan, 6 No. Michigan Avenue, Chicago 2, Ill.

Sales Representatives Wanted—Michigan, Minnesota, Missouri, Ohio and some other good exclusive territories available. Must be capable of selling our service to heating air conditioning and refrigeration trades. Also to national users of heating and refrigeration equipment. Long established mid-western firm. Repeat orders, commission basis. Very profitable for man able to handle this since it is a service to the trade very much in demand today. Address Key 881, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Wanted Salesmen and Manufacturers representatives to represent our complete furnace line. Ideal territories open. New engineering and newly designed furnaces just added to old established well known line manufactured by us. Territories protected. Need aggressive sales people. Give full reference and experience. In reply address, The Rybolt Heater Co., Ashland, Ohio.

Rates for display space in the Service Section are $10.00 per inch per insertion. One-inch minimum space accepted.

the best reason for
business paper advertising
today
. . . is *tomorrow!*

CLASSIFIED ADVERTISING

Situations open . . .

WANTED: EXPERIENCED HEATING ENGINEER. Old established Ohio Manufacturer of warm air furnaces, requires the services of an experienced engineer for creative, design and development work. Give full resume of education, experience and approximate salary desired. Include snapshot or small photo. Address Key 896 A, American Artisan, 6 No. Michigan Ave, Chicago 2, Ill.

Midwestern firm with over 35-year background in wholesale jobbing business offers top executive position to person capable of managing our heating division. Reply with references and complete personal history to Key 902 American Artisan 6 No. Michigan Ave, Chicago 2, Ill.

"... *your time is money!*"

..... so why should you waste it by looking around for items or personnel to make your organization more efficient? A simple classified advertisement in American Artisan will turn the trick for you quickly and at low cost. No matter what you need or have to sell one of our readers will have it or want it.

Rates are shown on preceding page.

closing date is the twentieth of the month preceding issue.

Let's hear from you!

PLEASE GIVE GENEROUSLY
1952 RED CROSS FUND

SERVICE SECTION

SHEET METAL MACHINES & TOOLS

Lockformer Pittsburgh Machines
Lockformer Cleat Machines
Chicago Hand Brakes
Chicago Press Brakes
Pexto Power Shears
Pexto Foot Shears
Pexto Rotary Machines
Pexto Slip Rolls
Pexto Bar Folders
Smith Cleat Benders
Rex Spot Welders
Reed Power Rolls
Whitney Punches
Whitney Foot Presses
Wilder Slitters
Pexto Mechanic's Tools
Black & Decker Electric Tools
Bett-Morr Bandsaws

When in Chicago, visit our Machinery Showroom

COMPLETE LINE OF SHEET METAL & VENTILATING SUPPLIES

SEND FOR NEW CATALOG

CENTRAL-WEST MACHINERY CO.
335 S. WESTERN AVE. CHICAGO 12, ILL.
PHONE: HAymarket 1-0900

PROMPT DELIVERY AVAILABLE

ADJUSTABLE ELBOWS
Registers and Grilles
Deliveries from Stock
Juniper Elbow Co. Inc.
72-15 Metropolitan Ave.
Middle Village, L.I., N.Y.

RUBBER LADDER SHOES
for safe climbing
$2.95 per pair
JOHNSON LADDER SHOE CO.
Eau Claire, Wisconsin

Large Warehouse Stocks!

Despite the critical situation regarding steel and non-ferrous metals our warehouse is chock-full of items urgently needed in the construction industry:

STEEL • ALUMINUM • COPPER ERAYDO ZINC and miscellaneous steel products used by the Sheet Metal Worker and Roofer.

●

Available for Instant Shipment
Phone or Write Your Requirements

POTTS-FARRINGTON CO.
FORMERLY W. F. POTTS, SONS & CO., INC.
4250 WISSAHICKON AVE., PHILADELPHIA 29
PHONE: BAldwin 3-1000

SERVICE SECTION

FOLDING BRAKES
Form angles, flanges and Pittsburgh locks. 26 gauge steel. Cam locking. Can be bolted to bench, or edge of truck. All steel, reinforced. Shipped Express Collect, 30" size. Wt. 54 lbs., $26.50. 36" Wt. 66 lbs., $31.00; 48", 100 lbs., $45.00. Floor mountings, 32" high, $7.00 extra. Order direct, cash, or C.O.D., or send for folder.

VYKE BRAKE CO.
7-1116 S. 27th St., Omaha 5, Nebraska

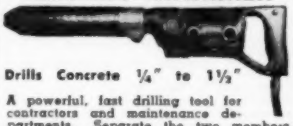
A DRIVE CLEAT NOTCHER
For notching drive cleats up to 3 in. in width, 22-ga. or lighter. Can be operated by hand or foot or can be easily mounted on the bench or on the job with clamps or bolts and screws.

CUT SOLDERING COSTS IN HALF

Will give you hot soldering iron in one minute—Solders eight hours for 10c—Right amount of heat—No changing of irons—Make your own fuel from water and carbide.

REINER & CAMPBELL CO., INC.
Post Office Box 5035 Newark 5, N. J.

WODACK "DO-ALL"
ELECTRIC HAMMER



Drills Concrete ¼" to 1½"

A powerful, fast drilling tool for contractors and maintenance departments. Separate the two members and it's a heavy duty ⅜" electric drill. TWO TOOLS IN ONE. Star drills in 20 diameters and 20 other hammer tools for chipping, grooving, etc. Saves man hours. Speeds up work — 12 to 15 times faster than with hand tools.

Ask for the New Bulletin 510-AA

Wodack Electric Tool Corp.
4627 W. Huron St. Chicago 44, Ill.

Strato Cap

• All aluminum vent cap • Increased customer acceptance • Increased profits • Top performance under all conditions • Made in six sizes 3" to 8" incl. • Dealer & Jobber inquiries invited.

RYNIKER STEEL PRODUCTS CO.
11-19 N. 25th St., Billings, Mont.

IT'S HERE AT INTERSTATE

for immediate delivery!

SHEARS POWER
NEW 10' 10 Gauge PEXTO
NEW 72" 16 Gauge PEXTO
NEW 6' 10 GA. PEXTO GAP
NEW 72" 14 Gauge PEXTO
NEW 52" 16 Gauge PEXTO
8' 16 GA. NIAGARA
72" 14 GA. WYSONG & MILES
12 GA. QUICKWORK STAMPING TRIMMER
62" 10 GA. NIAGARA, GAP
208 NIAGARA, RING & CIRCLE, 8 GA. CAP., WILL FLANGE 10 GA.
12' 10 GA. BERTSCH GAP, 15" GAP
3' 10 GA. BERTSCH GAP
NO. 24S BUFFALO, SLITTING

ROLLS, POWER
12' 3/16" CAP. NILES, PYR. TYPE. Drop end 6' LOWN. DROP END, INITIAL TYPE
36" x 10 GA. PEXTO SLIP ROLL FORMER
KELSEY-HAYES BAND ROLLER
7' BERTSCH POWER 15" GAP PINCH ROLL, DROP END, 6" DIA. ROLLS

PRESS BRAKES
NO. 247 WHITNEY-JENSEN 18" POWER 14 GA. CAP., FRICTION CLUTCH
NEW NO. 35-6 MILWAUKEE

IRONWORKERS
SIZE 20 MODEL SCG OEKING: 4½"x4½"x⅝-18"
2½ BUFFALO FORGE, UNIV., NEW 1950

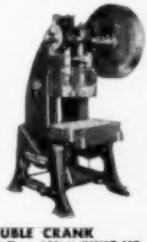
NO. 1 GRAY NIBBLER, 3/16" Cap.

CHICAGO STEEL BRAKES
10' 16 GA. CAP., HAND
8' 14 GA. CAP., HAND
NEW 8' 18 GA. CAP., HAND
NEW 8' 16 GA. CAP., HAND
NO. 167, APRON, ⅝" AT 6' CAP., ½" AT 1'

BAR FOLDERS
NEW NO. 63F PEXTO, 30" 22 GA.
21" NIAGARA, 22 GA.
NEW NO. 05SD PEXTO, 36", 20 GA.

WELDERS, SPOT
3 KVA-100 KVA NEW REX
10 KVA REX, 18" thr., 220 volt.
15 KVA REX, Foot operated, 18" thr., 220 volt.
NEW 50 KVA REX AIR OPER., PRESS TYPE, 20" THR., 220 VOLT
PRACT. NEW 50 KVA PROGRESSIVE, 54" THR., 220 VOLT
175 KVA THOMPSON, 25¼" THR. 440 VOLT
75 & 100 KVA THOMSON: 12" throat, 440 volt.
PMC025-11 SCIAKY PRESS TYPE, AIR OPER., 440 VOLT

OBI PRESSES
100 TON HEIDRICH, NEW 1947, 6" str., 19"x28"
NO. 5 CONS., 43 ton, 4½" str.
NO. 5 MINSTER, 43 TON, 4" STR., 18"x28"
NO. 5½ WALSH, 3¾" shaft, 1½" str.
71 TON MOSSBERG & GRANVILLE, 2" str., 8" shut ht.
NO. 4 WALSH, 31½ TON, 2½" str., 7⅞" SHUT HT.
NO. 21 BLISS, 31½ Ton, 2-⅜" str.
NO. 3 WALSH, 2½" shaft, 2" str.
NO. 5½ NIAG., 3" shaft, 2½" str.
NO. C-13 FERR., 2-⅞" shaft, 3" str.



NO. 4½ JOHNSON
NO. 5 JOHNSON
NO. 44 JOHNSON
NO. 5-G JOHNSON
NO. 55 JOHNSON
NO. 7 JOHNSON

PRESSES DOUBLE CRANK
NO. 152-B CLEVE., 56 Ton, 12¾" SHUT HT.
NO. 3-A BLISS S.G., 56 Ton, 5" str.
NO. 90-E TOLEDO, 43 Ton, 2" stroke
NO. 4 WEST S.G. 71 Ton, 3-⅞" str.

Our "BLUE BOOK" Lists and illustrates all Types of Metal Working Machinery. SEND FOR YOUR FREE COPY TODAY.
Write-Wire-or phone YArds 7-5900 Eastern Office-2829 N. Broad St., Philadelphia 32, Penna. Phone BAldwin 9-5932

INTERSTATE Machinery Co., Inc.
1433 W. PERSHING RD., CHICAGO 9, ILL.

INDEX TO ADVERTISERS

SERVICE SECTION . . .

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

Certified

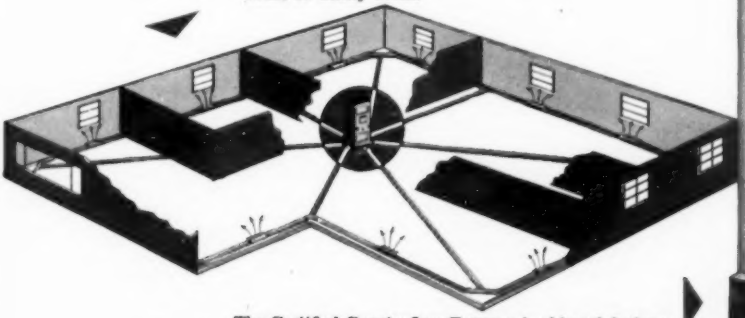
Counterflow

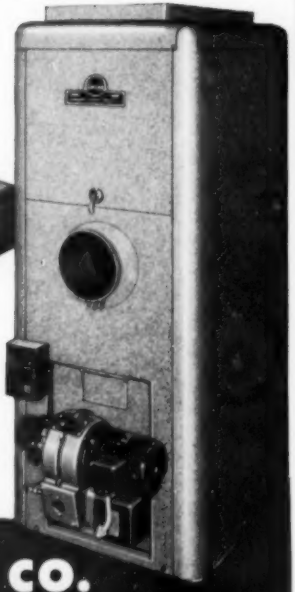
PERIMETER HEATING

for homes without basements

1. Engineered exclusively for Perimeter Heating.
2. Warms floors; delivers draft free heat.
3. Responds faster; more economical.
4. Combines best features of radiant heat and forced air systems.
5. Automatic safety control in blower compartment safeguards filters.
6. Counterflow principle saves fuel.

The new Certified oil and gas fired Counterflow Furnaces are engineered to operate perfectly with any type of perimeter heating system. Compact in design, they require only a few square feet of floor space . . . can quickly and easily be set up in closet or utility room.





The Certified Counterflow Furnace is shipped factory assembled, ready to install. Saves time and labor. Sell the new efficient Certified Counterflow Furnace, specially designed for Perimeter Heating. Write for free literature and attractive low prices on Counterflow Perimeter Heating and the complete Certified line.

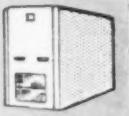
(OIL UNITS CONVERTIBLE TO GAS)

Certified

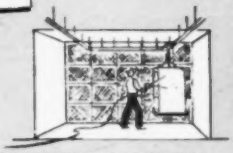
CERTIFIED FURNACE CO.

THERE'S AN RP *Air Filter for:*

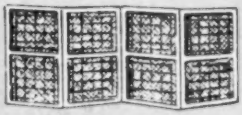
FORCED WARM AIR FURNACES



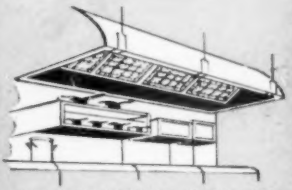
UNIT AIR CONDITIONERS



PAINT SPRAY BOOTH



CENTRAL SYSTEM FILTER BANKS

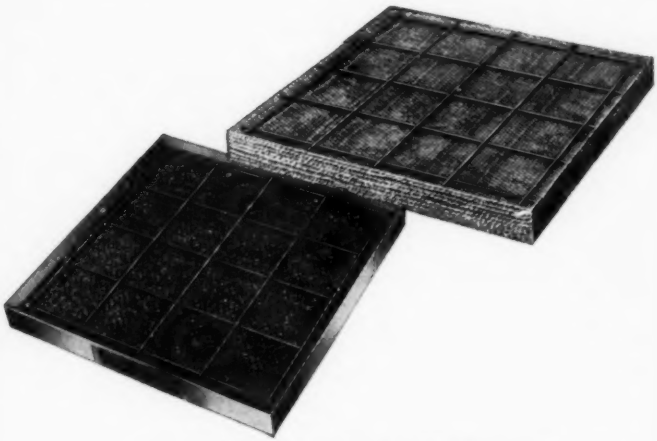


KITCHEN GREASE CANOPIES

ENGINE INTAKE

SPECIAL PURPOSE DESIGNS

How's Your F.P.M*?



* FILTER PROFIT MARGIN—— IT'S BETTER WITH RP FILTERS!

Your filter business, either service or over-the-counter sales, will bring you a larger margin of profit with R-P filters. And remember, you and your customers have a choice of either washable or replaceable type filters with the RP line.

CHOOSE THE FILTER BEST SUITED TO YOUR NEEDS——

WASHABLE: E Z Kleen, the high volume, large profit washable filter that can be washed and re-used as often as desired. A high efficiency, low-cost filter for your customers who favor the washable type. E Z Kleen can be made odor-removing, too, with home-applied D-O Kote.

REPLACEABLE: Fiber Self-Seal filters, with the "Save-the-Frame" System gives you the highest profit margin possible in a filter service program. Or—the D-O Filter, the dust and odor removing filter for home and commercial heating and air conditioning systems.

Whatever your particular filter business needs—there's an RP answer. This versatile, complete line—the line with the highest profit margin has the filter program for you!

Write RESEARCH PRODUCTS CORP., Madison, Wis., U. S. A.

RP . . . PRODUCTS OF RESEARCH

WASHABLE AND REPLACEMENT AIR FILTERS • GREASE FILTERS
EVAPORATIVE COOLER MATERIALS